

**SEDIMENT CIRCULATION**  
**IN**  
**MIXED GRAVEL AND SHINGLE BAYHEAD BEACHES**  
**ON THE SOUTH EAST DORSET COAST**

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**Thesis submitted to the Council for National Academic Awards**  
**for the degree of Doctor of Philosophy**

\* \* \* \* \*

Vol II

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Department of Tourism and Field Sciences.**

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**FIGURE 1**

**CONCEPTUAL BEACH MODEL (KRUMBEIN 1964)**

**PROCESS ELEMENTS**

**RESPONSE ELEMENTS**

**ENERGY FACTORS**

**WAVES:** *Height, Period,  
Approach angle.*

**TIDES:** *Range, Diurnal  
pattern, Stage.*

**CURRENTS:** *Velocity,  
Direction.*

**WIND ON BACKSHORE:**  
*Velocity,  
Direction.*

**MATERIAL FACTORS**

*Mean grain diameter,  
Sorting,  
Mineral composition,  
Moisture content,  
Stratification.*

**SHORE GEOMETRY:**

*Straight, Curved.  
Bottom Slope:- Gentle,  
Steep.*

**BEACH GEOMETRY**

*Foreshore slope  
Width  
Height of berm  
Backshore width*

**BEACH MATERIALS**

*Mean grain size,  
Sorting,  
Mineral composition,  
Moisture content,  
Stratification.*

**FEEDBACK**

FIGURE 2

**INTER-RELATIONS AMONG PROCESS AND RESPONSE ELEMENTS OF KRUMBEIN'S CONCEPTUAL BEACH MODEL (1964)**

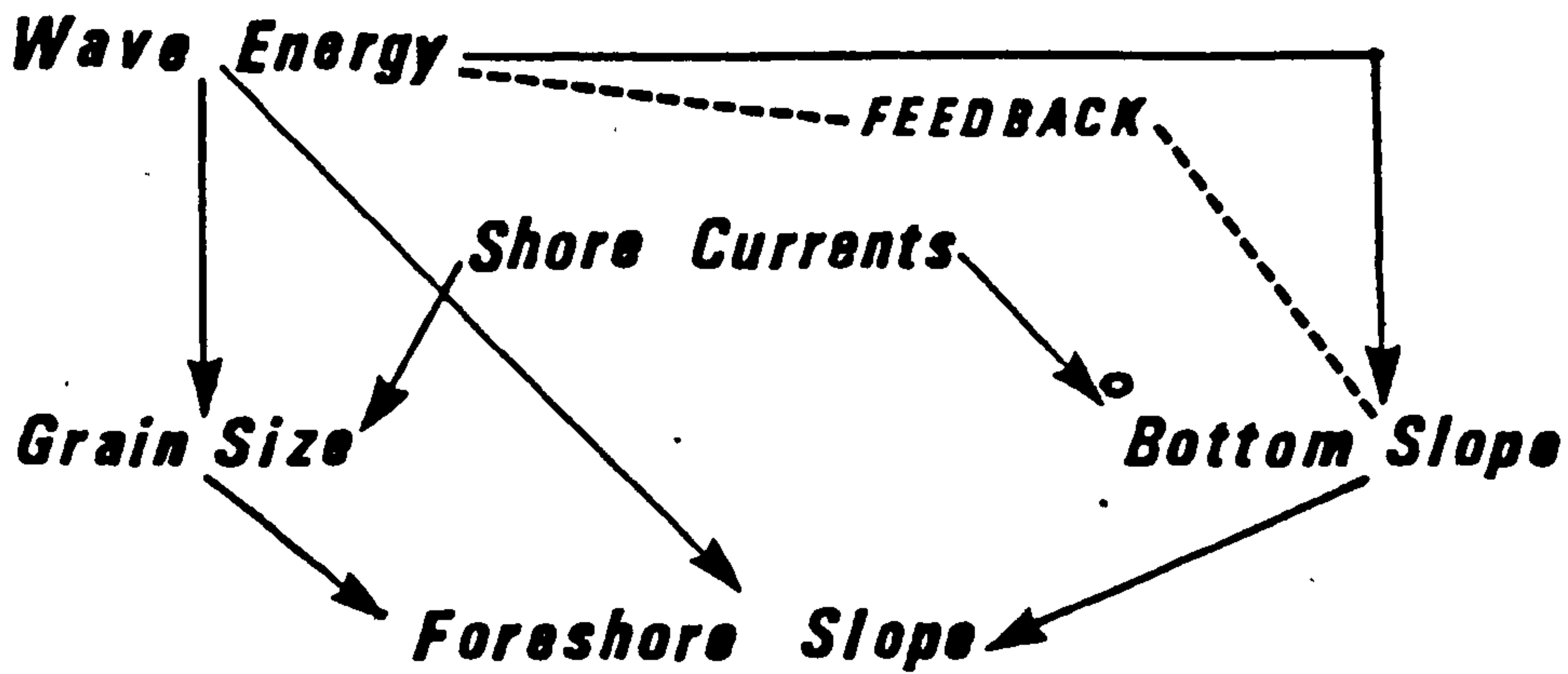
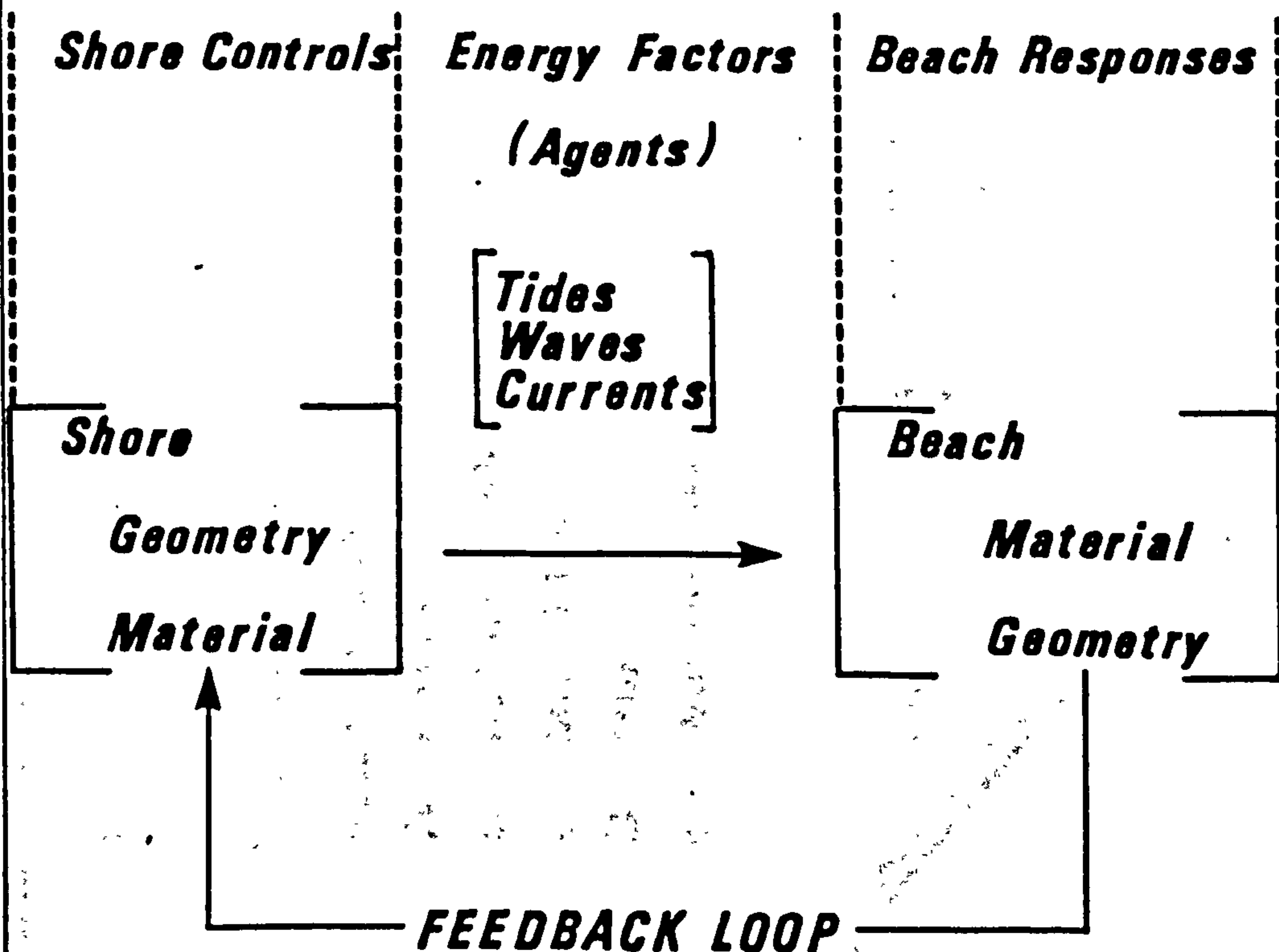


FIGURE 3

**ENERGY FACTORS SEPARATE FROM GEOMETRY AND MATERIAL FACTORS**



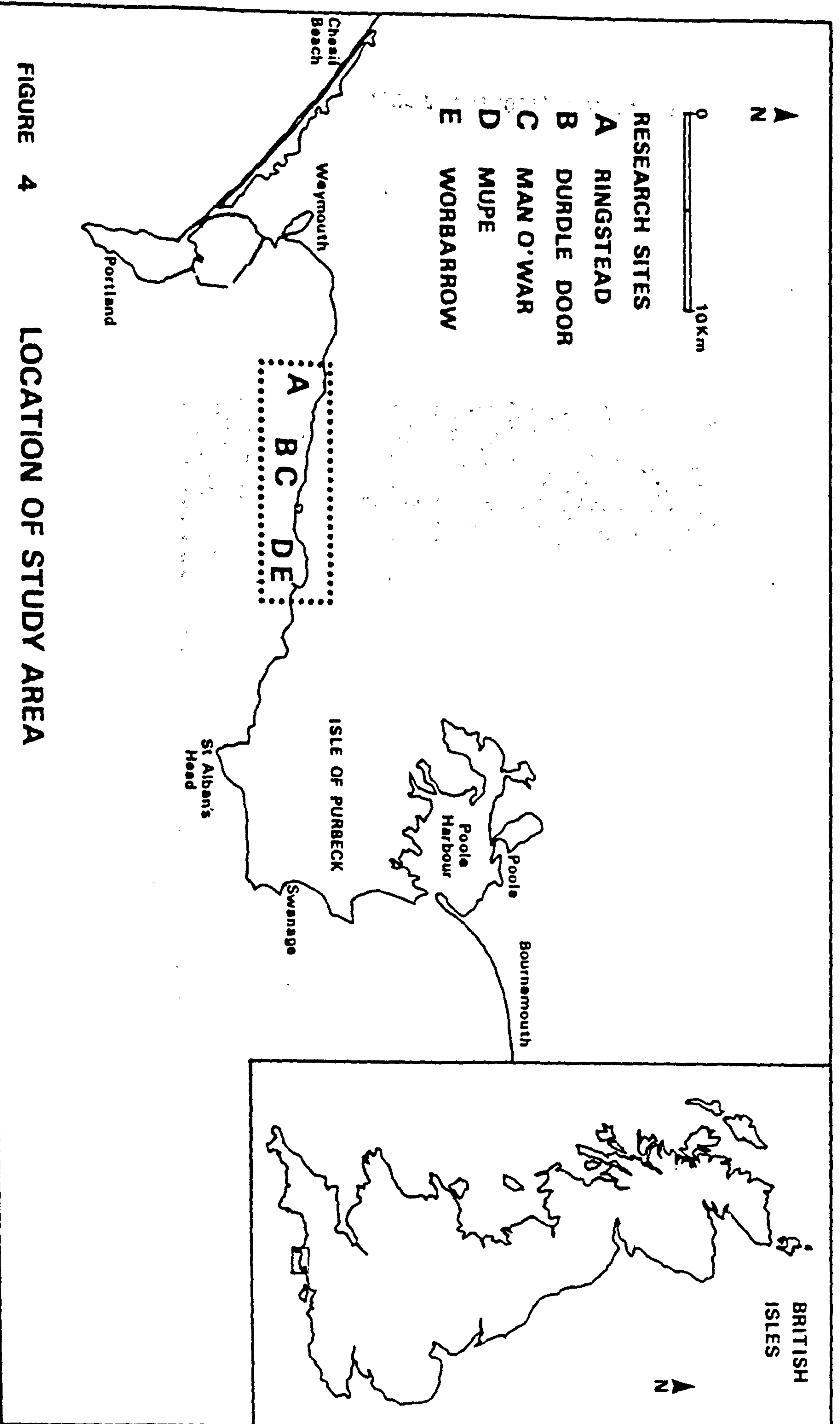


FIGURE 4 LOCATION OF STUDY AREA

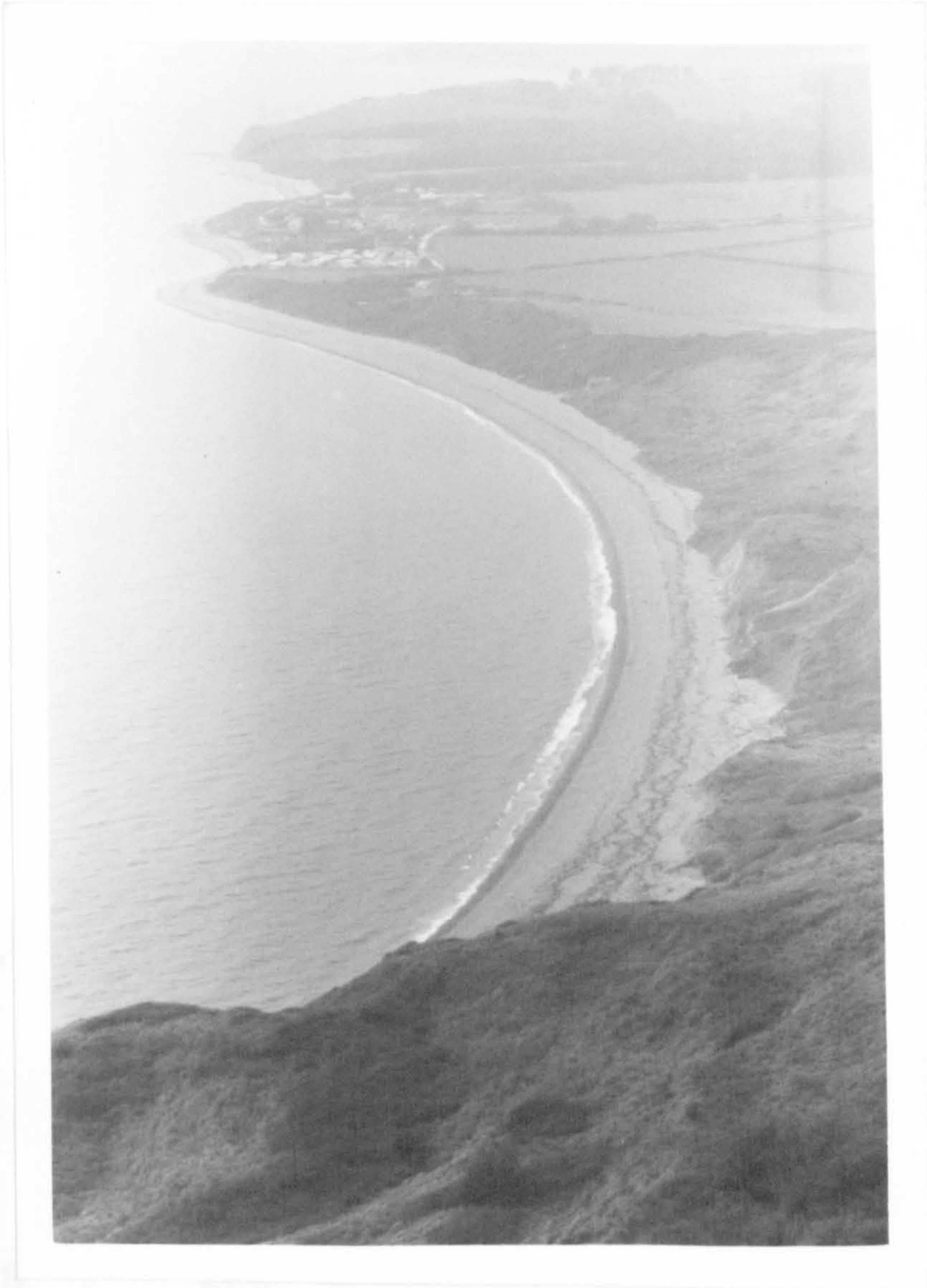


PLATE I. RINGSTEAD BAY (LOOKING WEST).

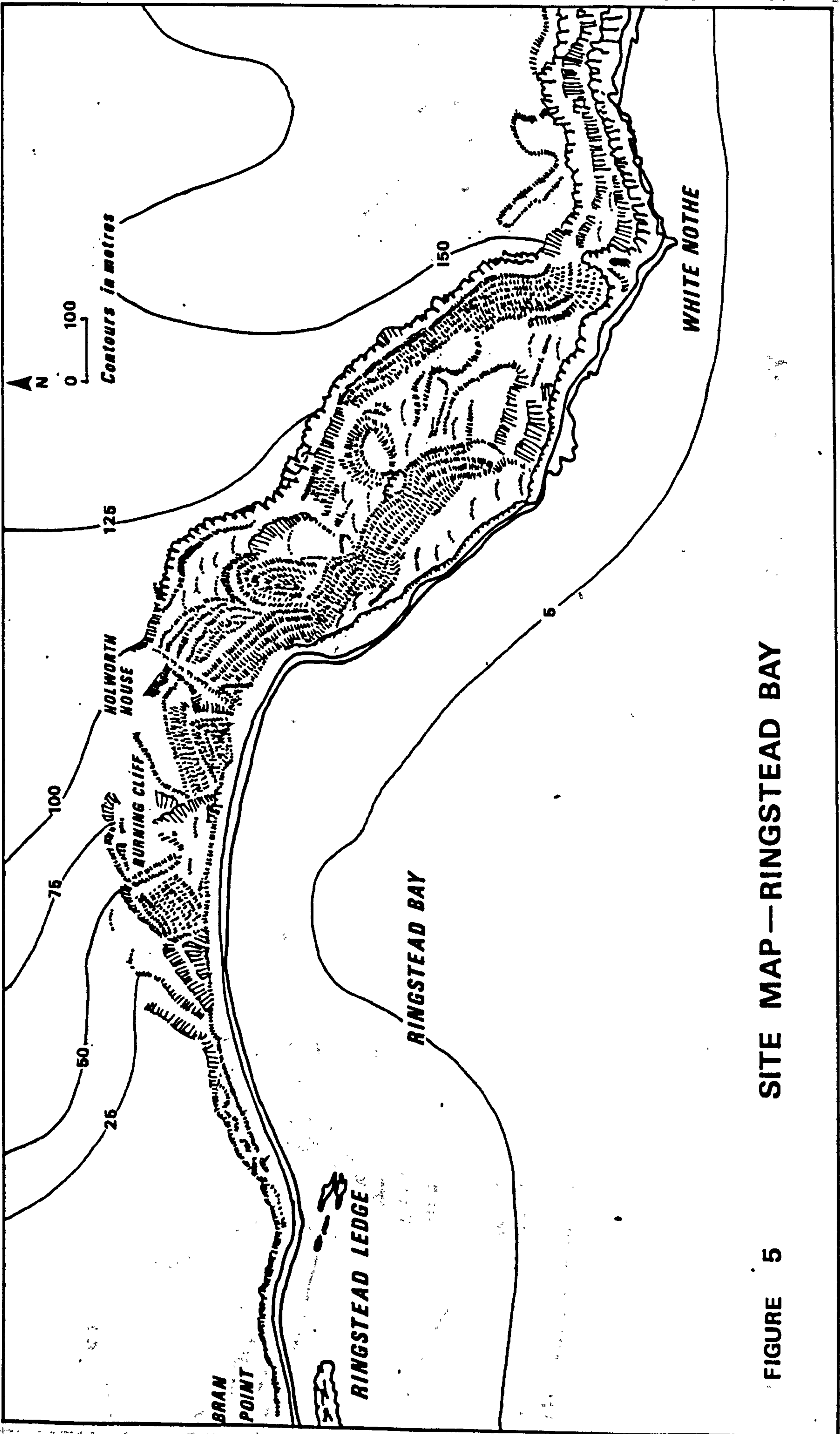
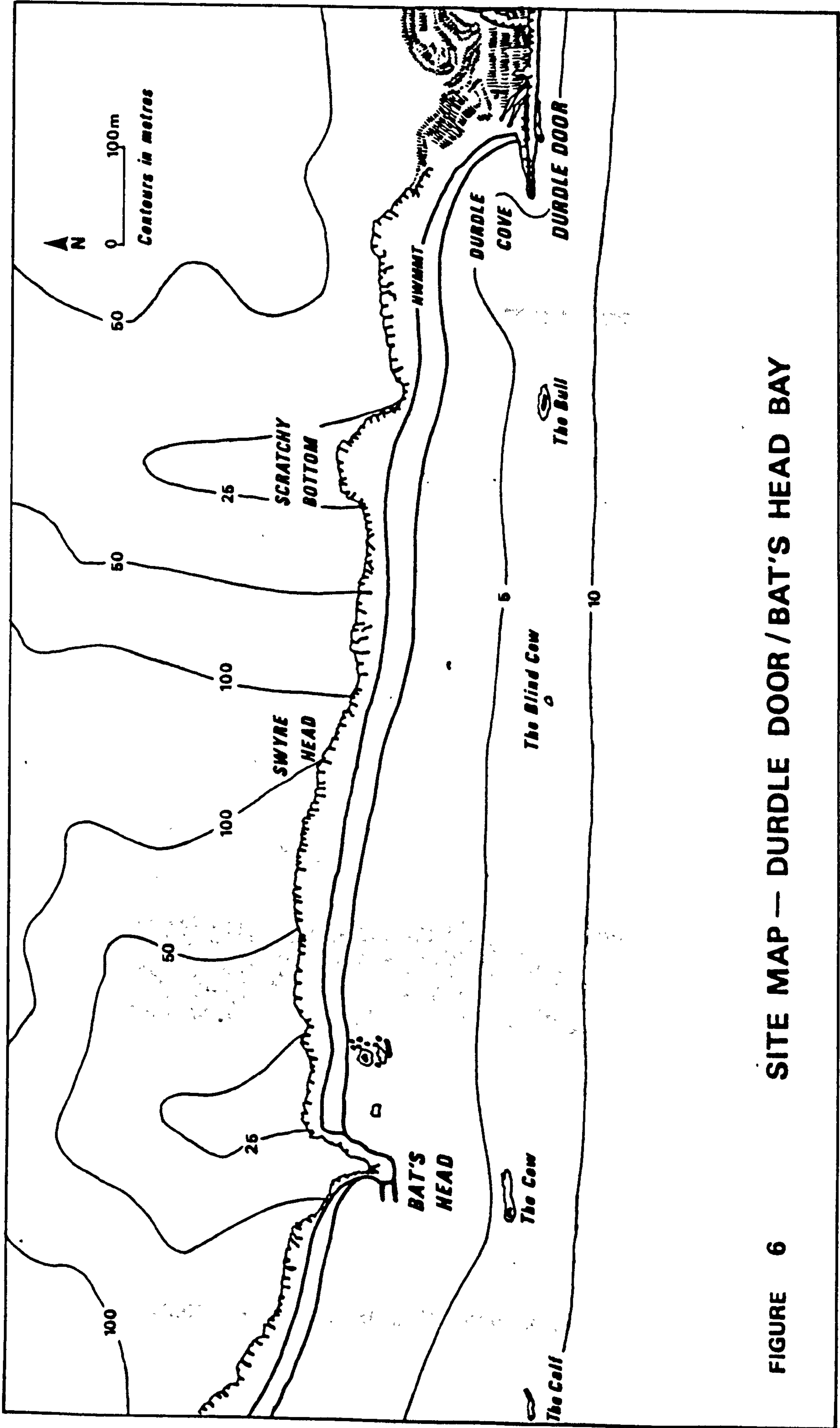


FIGURE 5 SITE MAP—RINGSTEAD BAY



**FIGURE 6 SITE MAP — DURDLE DOOR / BAT'S HEAD BAY**



PLATE 2. DURDLE DOOR-BAT'S HEAD (LOOKING WEST).

SITE MAP — MAN O'WAR COVE

FIGURE 7



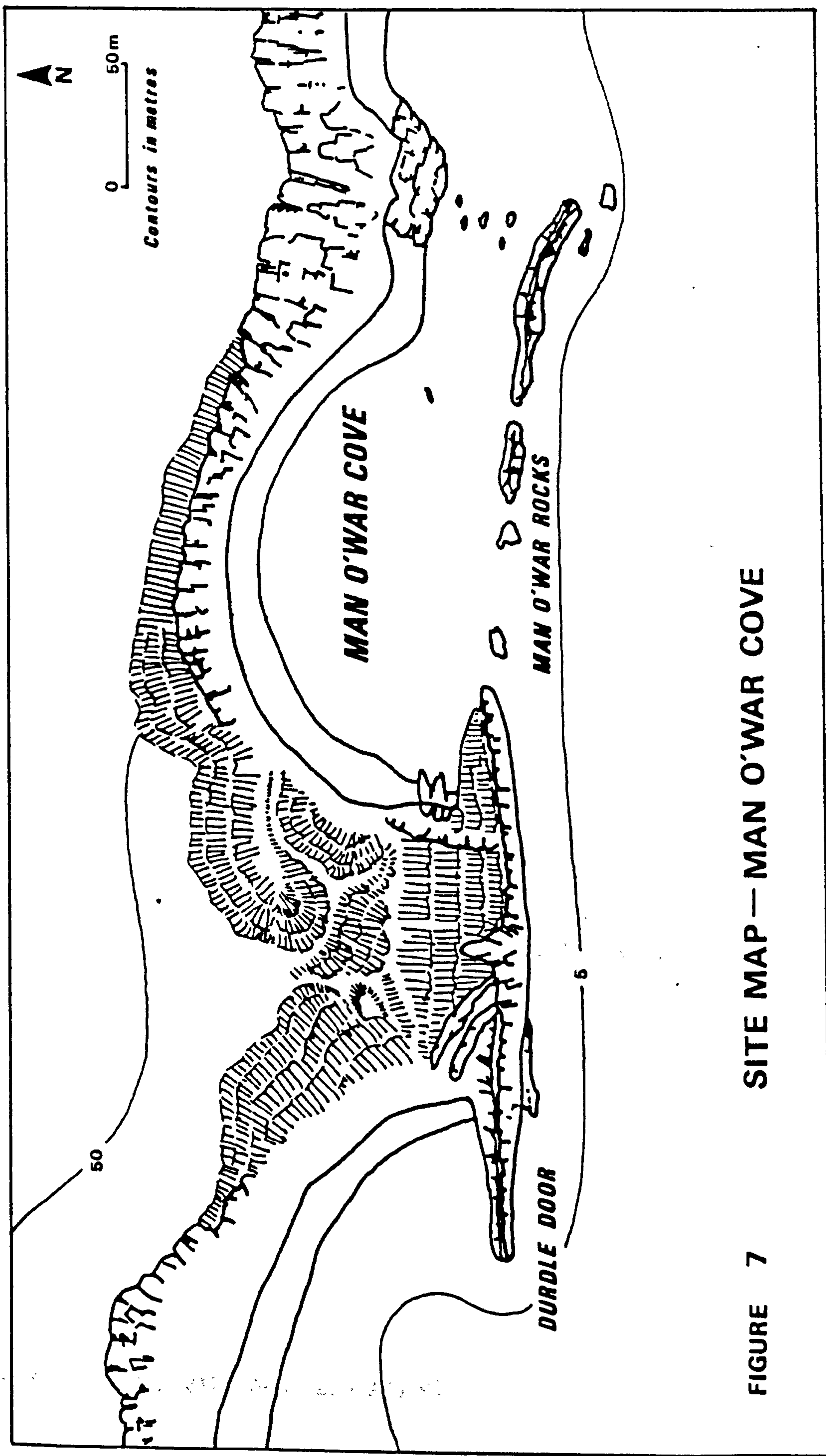


FIGURE 7 SITE MAP -- MAN O'WAR COVE



PLATE 3. MAN O'WAR COVE (LOOKING EAST).

SITE MAP

FIGURE 8

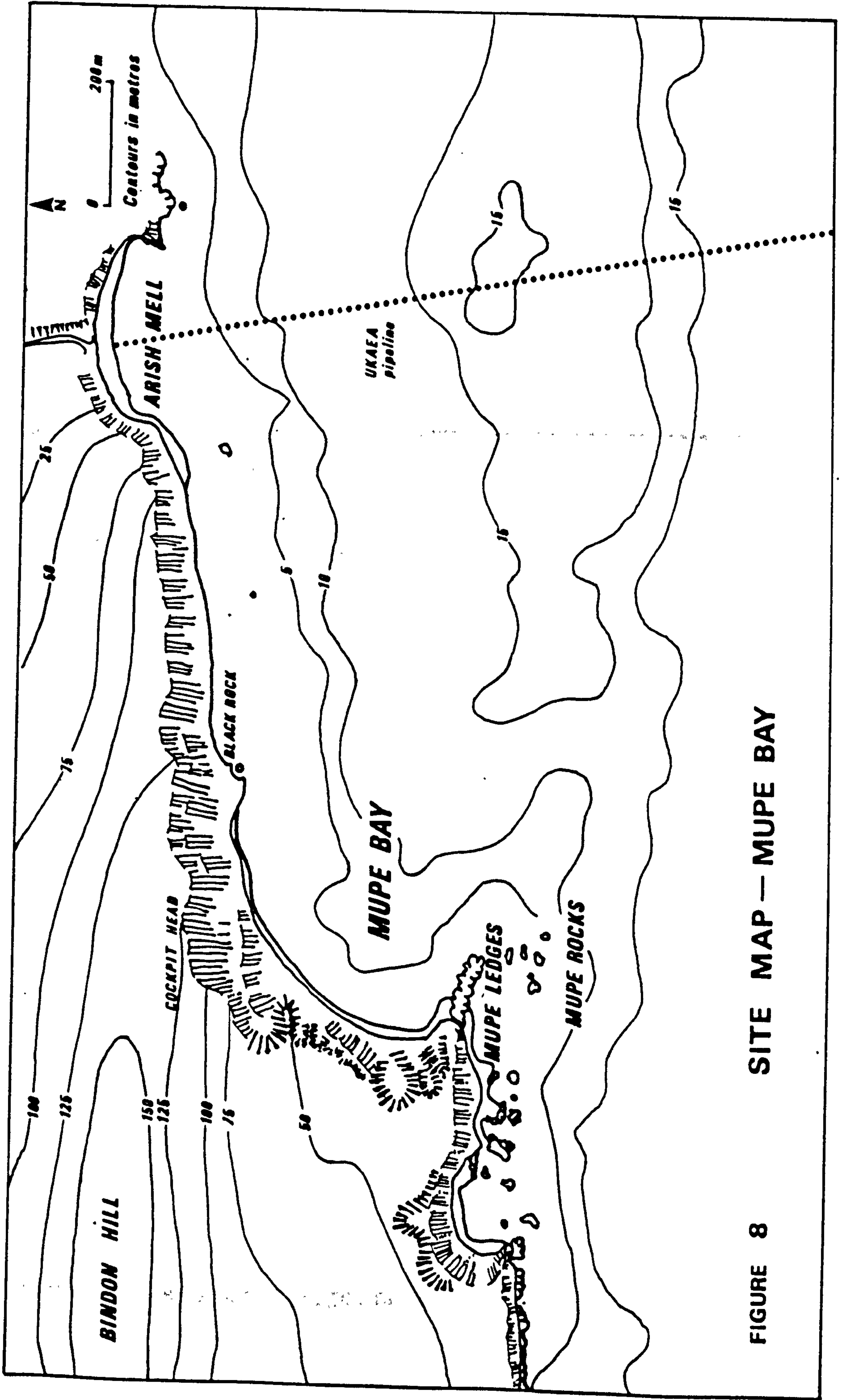


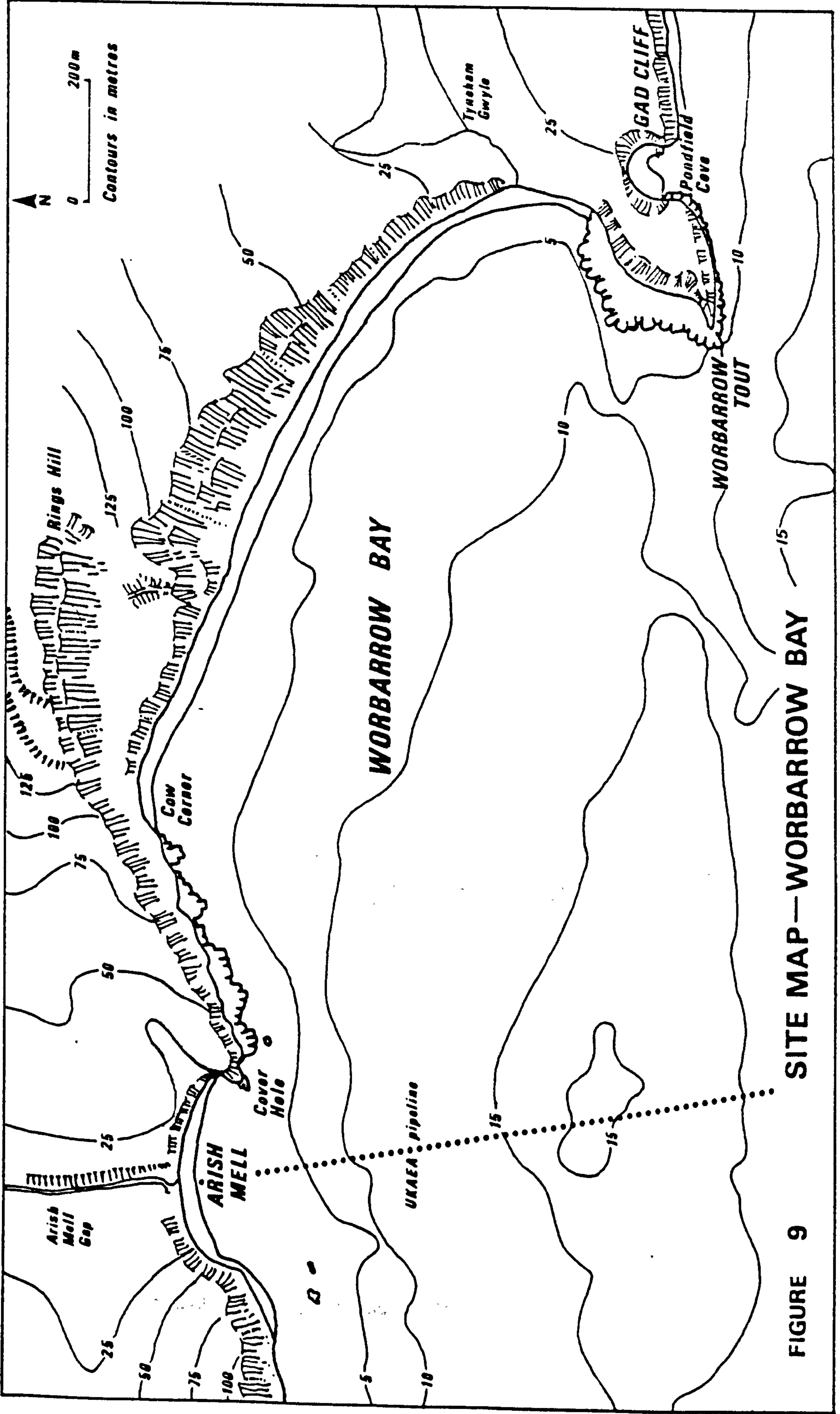
FIGURE 8 SITE MAP — MUPE BAY



PLATE 4. MUPE BAY (LOOKING EAST).

SITE MAP—WORSBARROW BAY

FIGURE 9



**SITE MAP—WORBARROW BAY**

**FIGURE 9**



PLATE 5. WORBARROW BAY (LOOKING WEST).

GEOLOGY:

Tertiary

Cretaceous:

Upper

Lower

Upper Jurassic:

Purbeck beds

Portland beds

Kimmeridge Clay

Corallian

Oxford Clay

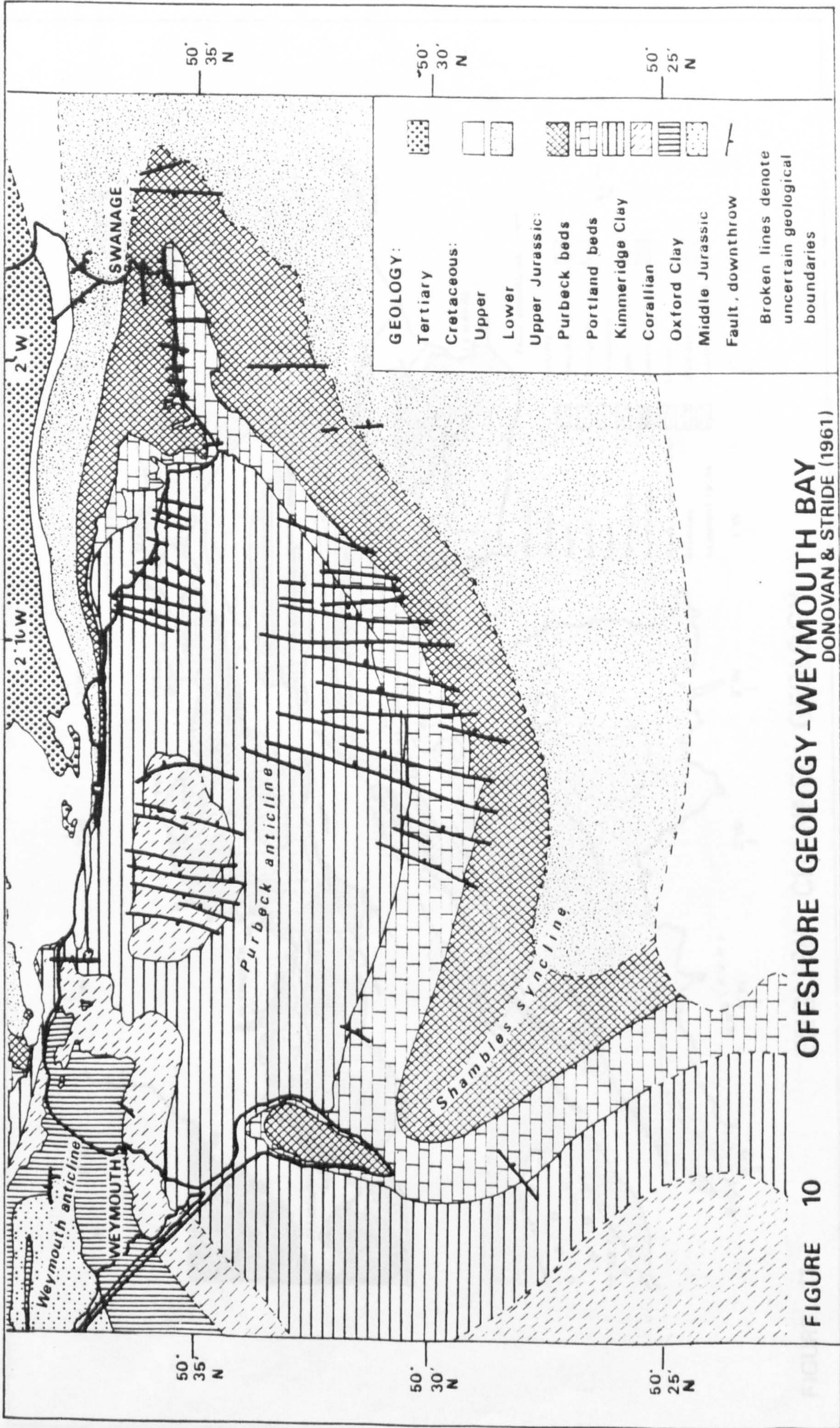
Middle Jurassic:

Freshwater

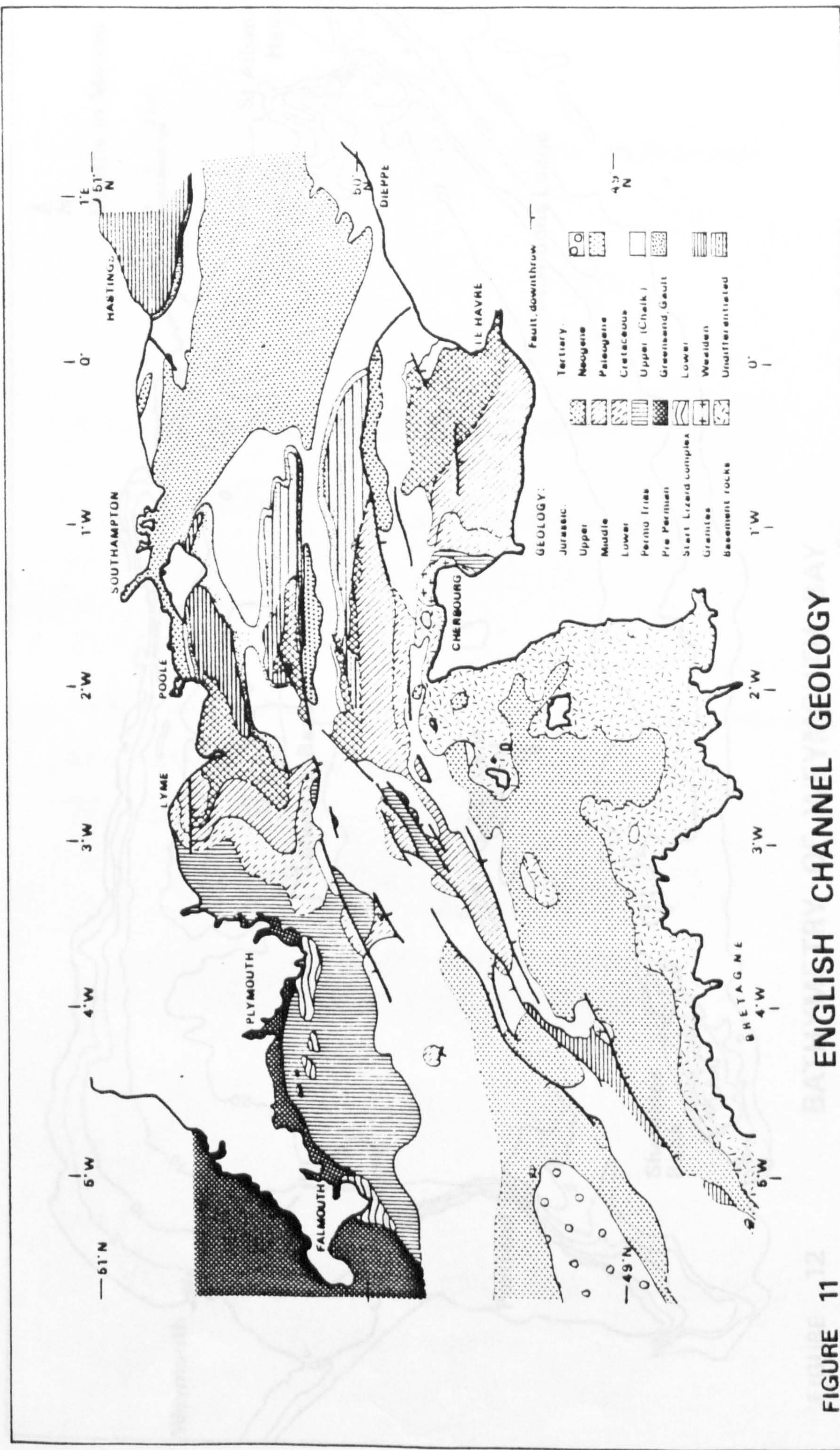
Broken lines denote uncertain geological boundaries

OFFSHORE GEOLOGY - WEYMOUTH BAY  
 JORDAN & STRIDE (1951)

FIGURE 10



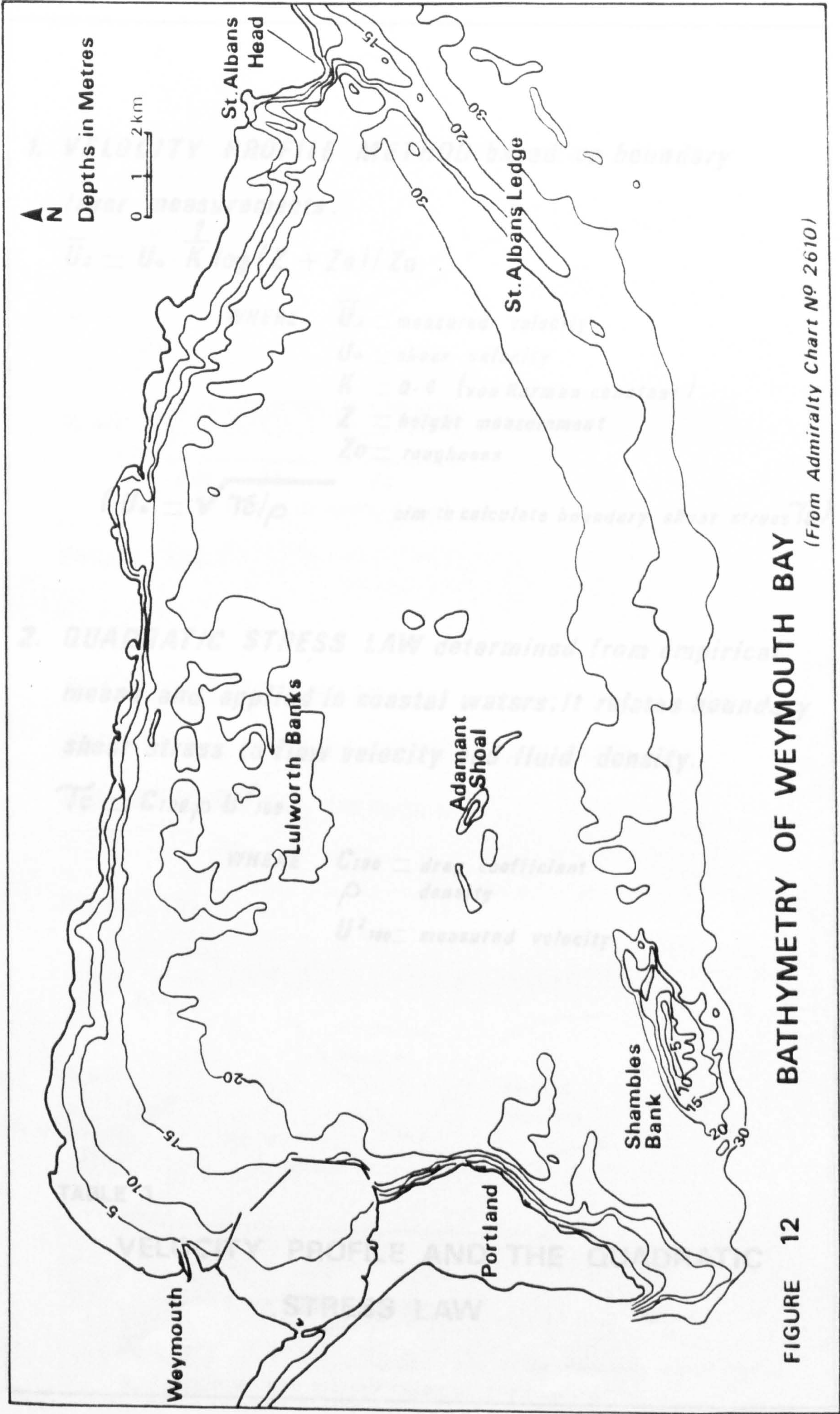
**FIGURE 10 OFFSHORE GEOLOGY - WEYMOUTH BAY**  
DONOVAN & STRIDE (1961)



ENGLISH CHANNEL GEOLOGY

FIGURE 11





**FIGURE 12 BATHYMETRY OF WEYMOUTH BAY**

*(From Admiralty Chart No 2610)*

**1. VELOCITY PROFILE METHOD based on boundary layer measurements.**

$$\bar{U}_2 = U_* \frac{1}{K} \log(Z + Z_0) / Z_0$$

WHERE  $\bar{U}_2$  = measured velocity

$U_*$  = shear velocity

$K = 0.4$  (von Karman constant)

$Z$  = height measurement

$Z_0$  = roughness

(  $U_* = \sqrt{\tau_c / \rho}$  ) aim to calculate boundary shear stress  $\tau_c$

**2. QUADRATIC STRESS LAW determined from empirical means and applied in coastal waters. It relates boundary shear stress to flow velocity and fluid density.**

$$\tau_c = C_{100} \rho U_{100}^2$$

WHERE  $C_{100}$  = drag coefficient

$\rho$  = density

$U_{100}^2$  = measured velocity

TABLE 1

**VELOCITY PROFILE AND THE QUADRATIC  
STRESS LAW**

**RELATIONSHIP BETWEEN SHEAR VELOCITY AND GRAIN DIAMETER**

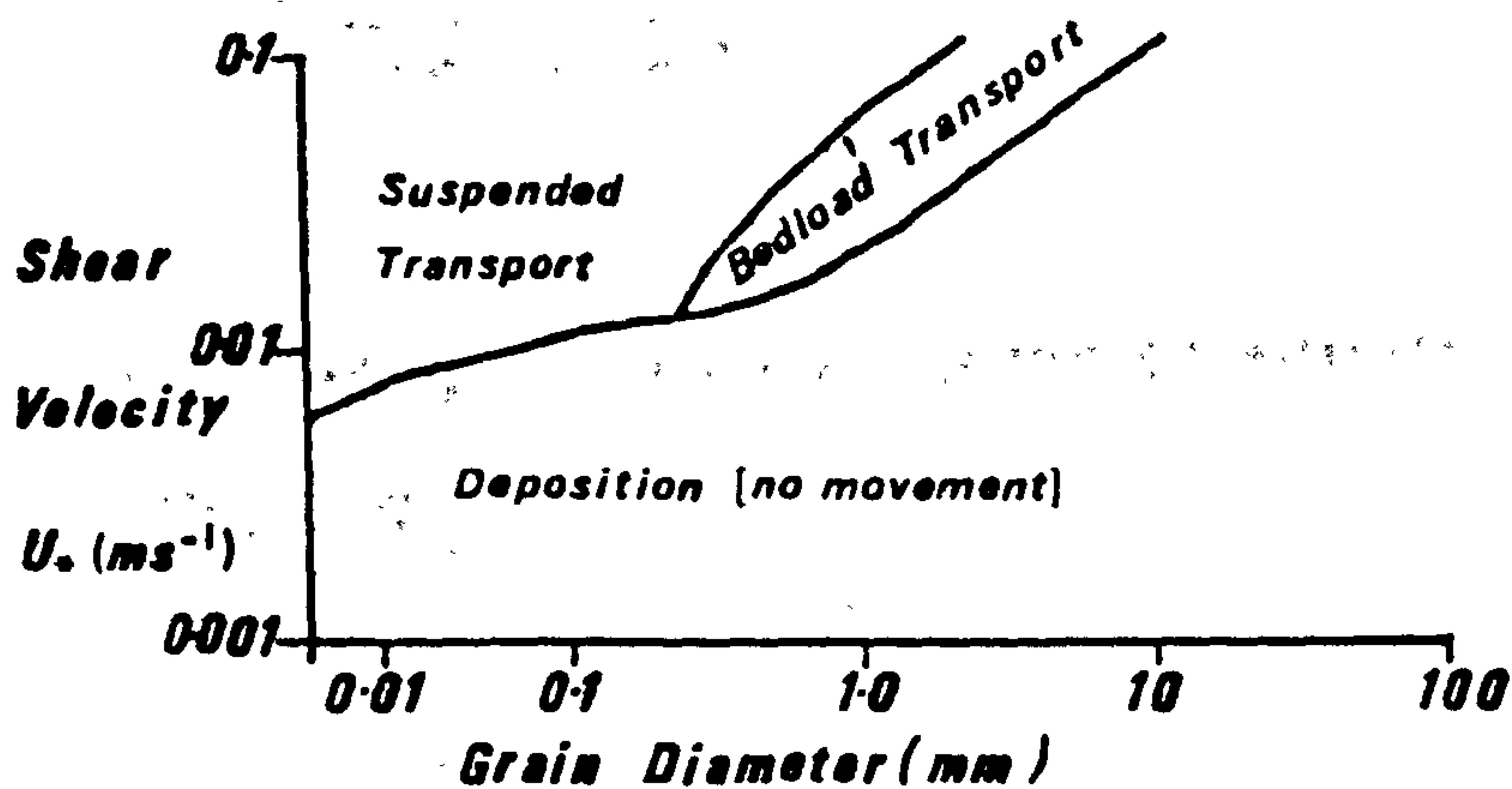
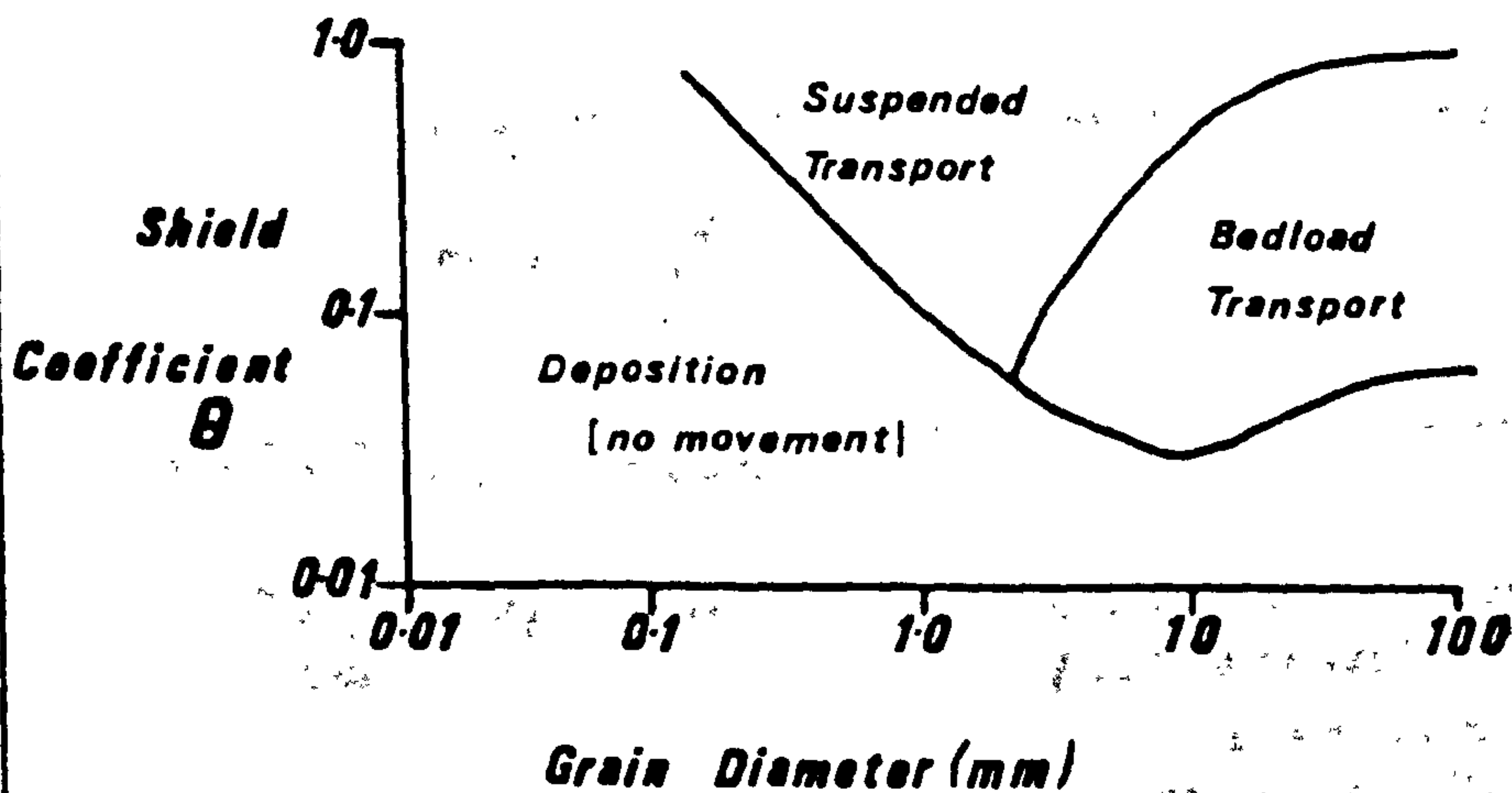


FIGURE 13a

**RELATIONSHIPS BETWEEN GRAIN DIAMETER AND THE CRITICAL FORCE REQUIRED FOR ITS MOVEMENT. (PETHICK 1984)**

FIGURE 13b



**SHIELD'S COEFFICIENT ( $\theta$ ):** the ratio between shear stress and grain weight plotted against grain diameter.

TABLE 2

**SHIELDS ENTRAINMENT FUNCTION (1936)**

$$\theta_c = \frac{\tau_c}{(\rho_s - \rho)gD}$$

is plotted against the grain REYNOLDS' NUMBER

$$Re_* = \frac{U_* D}{\nu}$$

- where
- $\tau_c$  = shear stress
  - $\rho_s$  = density of sediment
  - $\rho$  = fluid density
  - $g$  = acceleration due to gravity
  - $D$  = grain size
  - $\nu$  = kinematic fluid viscosity

**SHIELDS** identified four portions of  $\theta_c$  in terms of  $Re_*^d$  :-

1.  $Re_*^d < 2$
  2.  $2 > Re_*^d < 10$
  3.  $10 > Re_*^d < 1000$
  4.  $1000 < Re_*^d$
- } related to gravel movement

**BAGNOLD'S BEDLOAD TRANSPORT RATE (1963)**

$$\frac{\rho_s - \rho}{\rho_s} g j = k w$$

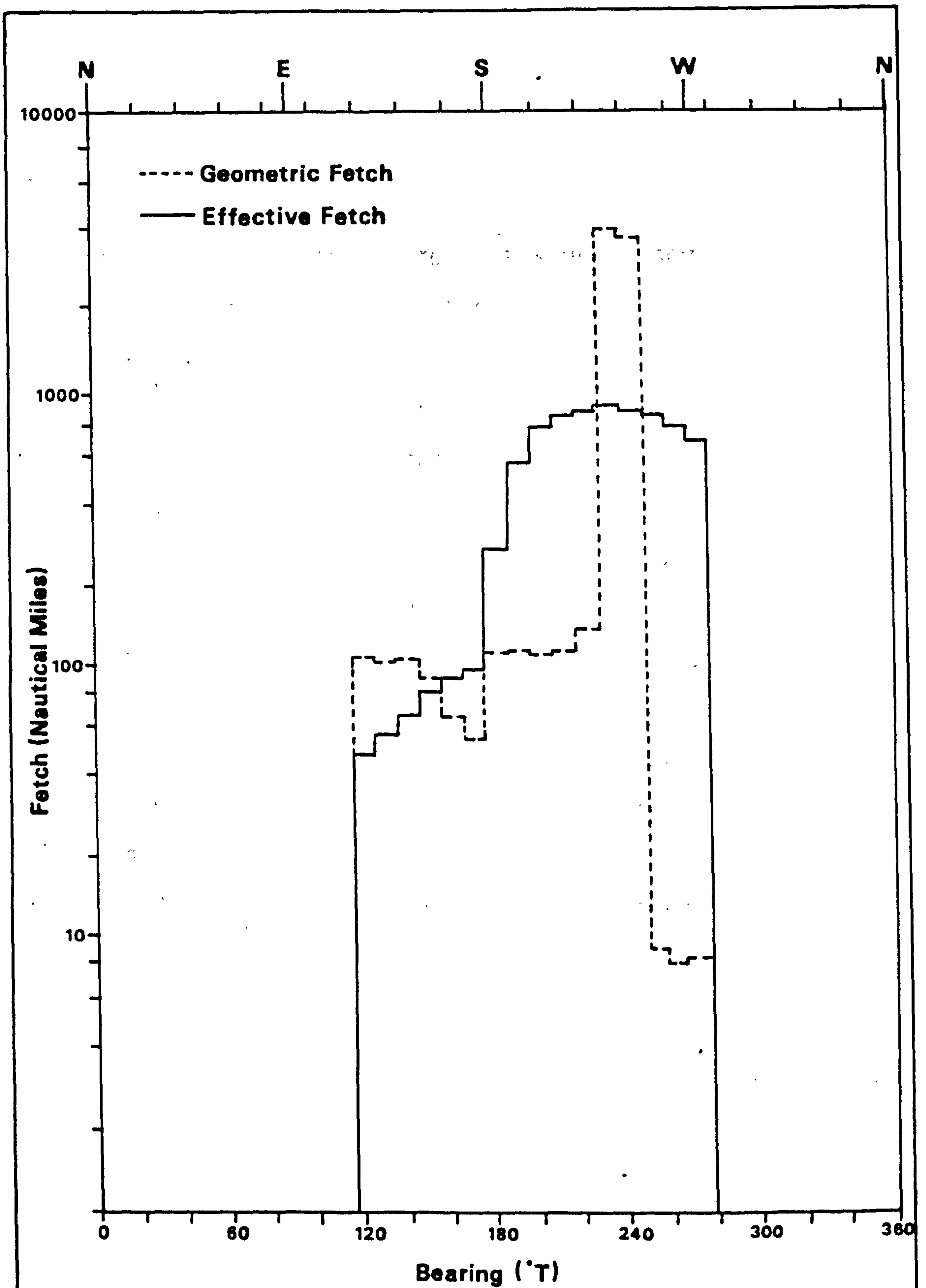
$g$  = acceleration due to gravity

$j$  = rate of sediment transport

$g/cm^2/sec^2$

$k$  = proportionality coefficient

$M$  = measure of power exerted on the bed by the fluid

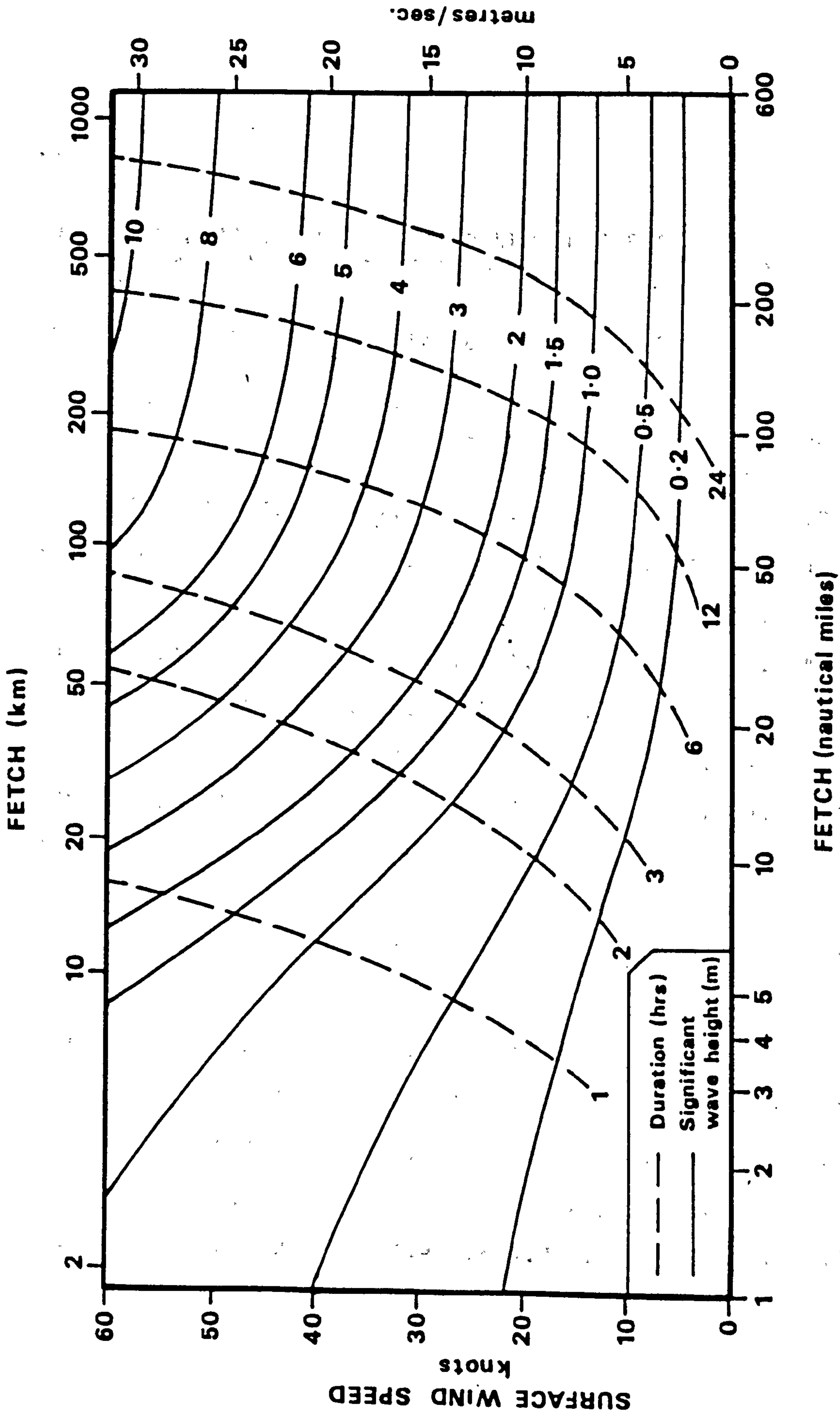


**FIGURE 14 EFFECTIVE FETCH CHARACTERISTICS AT WORBARROW BAY**

**TABLE 3**

**GEOMETRIC AND EFFECTIVE FETCHES FOR WORBARROW BAY**

BEARING FROM WORBARROW BAY (° T)	GEOMETRIC FETCH (km.)	EFFECTIVE FETCH (km.)
116	211	88.7
126	202	106.1
136	207	126.5
146	167	147.4
156	119	165.8
166	104	176.1
176	213	448.6
186	215	1074.7
196	211	1474.9
206	215	1590.3
216	261	1659.8
226	7223	1672.2
236	6889	1636.9
246	17	1554.8
256	15	1428.8
266	16	1259.5



**FIGURE 15 WAVE HEIGHT PREDICTION CHART FOR COASTAL WATERS (DARBYSHIRE & DRAPER 1963)**

TABLE 4

PREDICTED WAVE HEIGHTS AT WORBARROW BAY FOR A  $5\text{ms}^{-1}$   
 $10\text{ms}^{-1}$ ,  $15\text{ms}^{-1}$ , AND  $20\text{ms}^{-1}$  WIND BLOWING FOR 6, 12 AND  
 24 HOURS.

(Values calculated from figure 15; DARBYSHIRE & DRAPER 1963).

BRG. (°T)	EFF. FETCH (km).	WIND SPEED/HOURS DURATION											
		$5\text{ms}^{-1}$			$10\text{ms}^{-1}$			$15\text{ms}^{-1}$			$20\text{ms}^{-1}$		
		6	12	24	6	12	24	6	12	24	6	12	24
116	88.7	0.4	0.4	0.4	1.4	1.4	1.4	2.6	2.6	2.6	4.0	4.0	4.0
126	106.1	0.4	0.4	0.4	1.4	1.4	1.4	2.6	2.6	2.6	4.1	4.1	4.1
136	126.5	0.4	0.4	0.4	1.4	1.4	1.4	2.8	2.8	2.8	4.4	4.4	4.4
146	147.4	0.4	0.6	0.6	1.4	1.4	1.4	2.9	3.0	3.0	4.6	4.6	4.6
156	165.8	0.4	0.6	0.6	1.4	1.4	1.4	2.9	3.1	3.1	4.6	4.6	4.6
166	176.1	0.4	0.6	0.6	1.4	1.4	1.4	2.9	3.1	3.1	4.6	4.6	4.6
176	448.6	0.4	0.6	0.7	1.4	1.8	1.9	2.9	3.3	3.5	4.6	5.1	5.1
186	1074.7	0.4	0.6	0.7	1.4	1.8	1.9	2.9	3.3	3.6	4.6	5.1	5.3
196	1474.9	0.4	0.6	0.7	1.4	1.8	1.9	2.9	3.3	3.6	4.6	5.1	5.3
206	1590.3	0.4	0.6	0.7	1.4	1.8	1.9	2.9	3.3	3.6	4.6	5.1	5.3
216	1659.8	0.4	0.6	0.7	1.4	1.8	1.9	2.9	3.3	3.6	4.6	5.1	5.3
226	1672.2	0.4	0.6	0.7	1.4	1.8	1.9	2.9	3.3	3.6	4.6	5.1	5.3
236	1636.9	0.4	0.6	0.7	1.4	1.8	1.9	2.9	3.3	3.6	4.6	5.1	5.3
246	1554.8	0.4	0.6	0.7	1.4	1.8	1.9	2.9	3.3	3.6	4.6	5.1	5.3
256	1428.8	0.4	0.6	0.7	1.4	1.8	1.9	2.9	3.3	3.6	4.6	5.1	5.3
266	1259.5	0.4	0.6	0.7	1.4	1.8	1.9	2.9	3.3	3.6	4.6	5.1	5.3



Data processed from daily  
meteorological records at  
HMS Osprey, Portland Naval Base.

Beaufort Scale  
'7 4-6 1-3

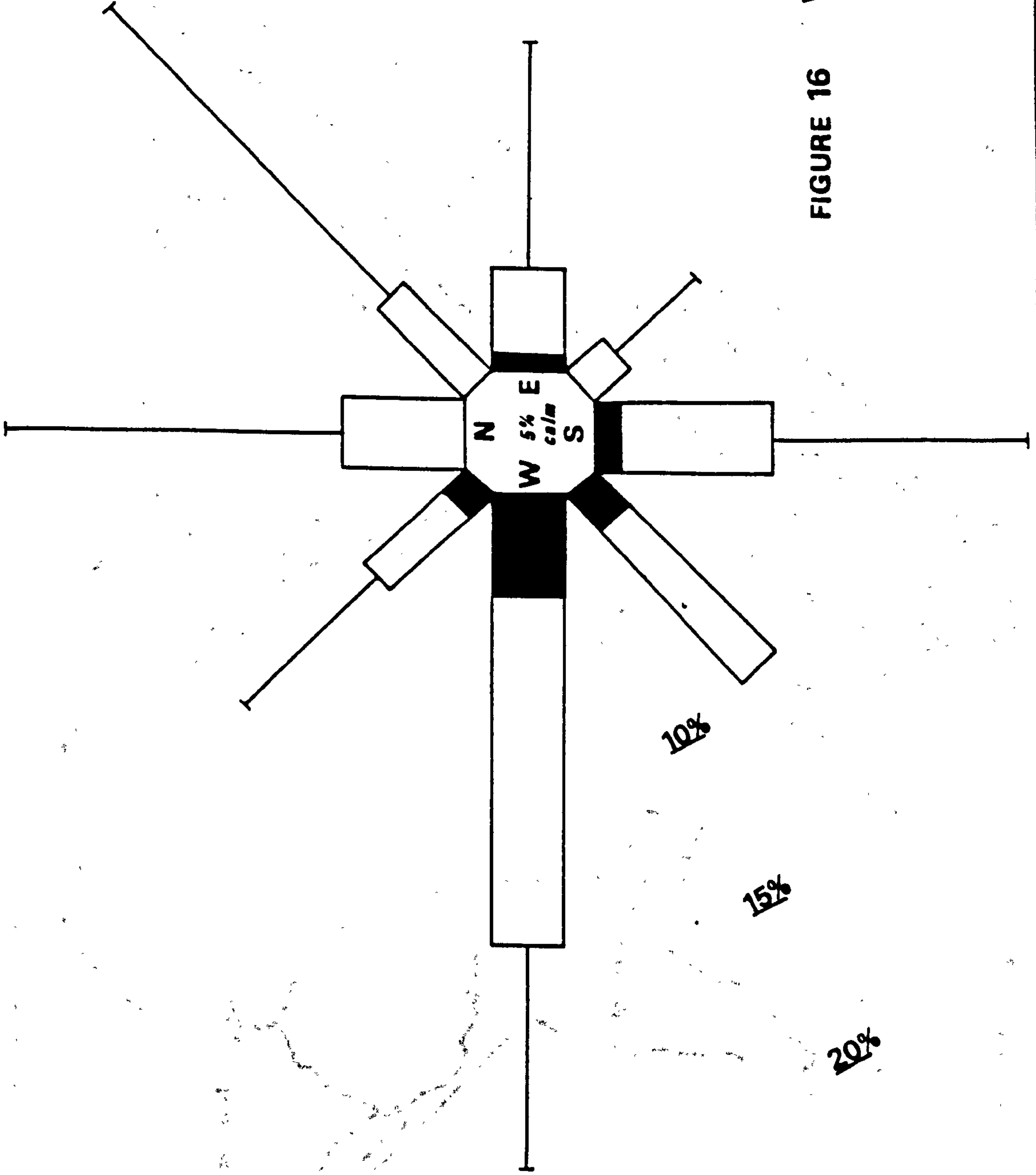

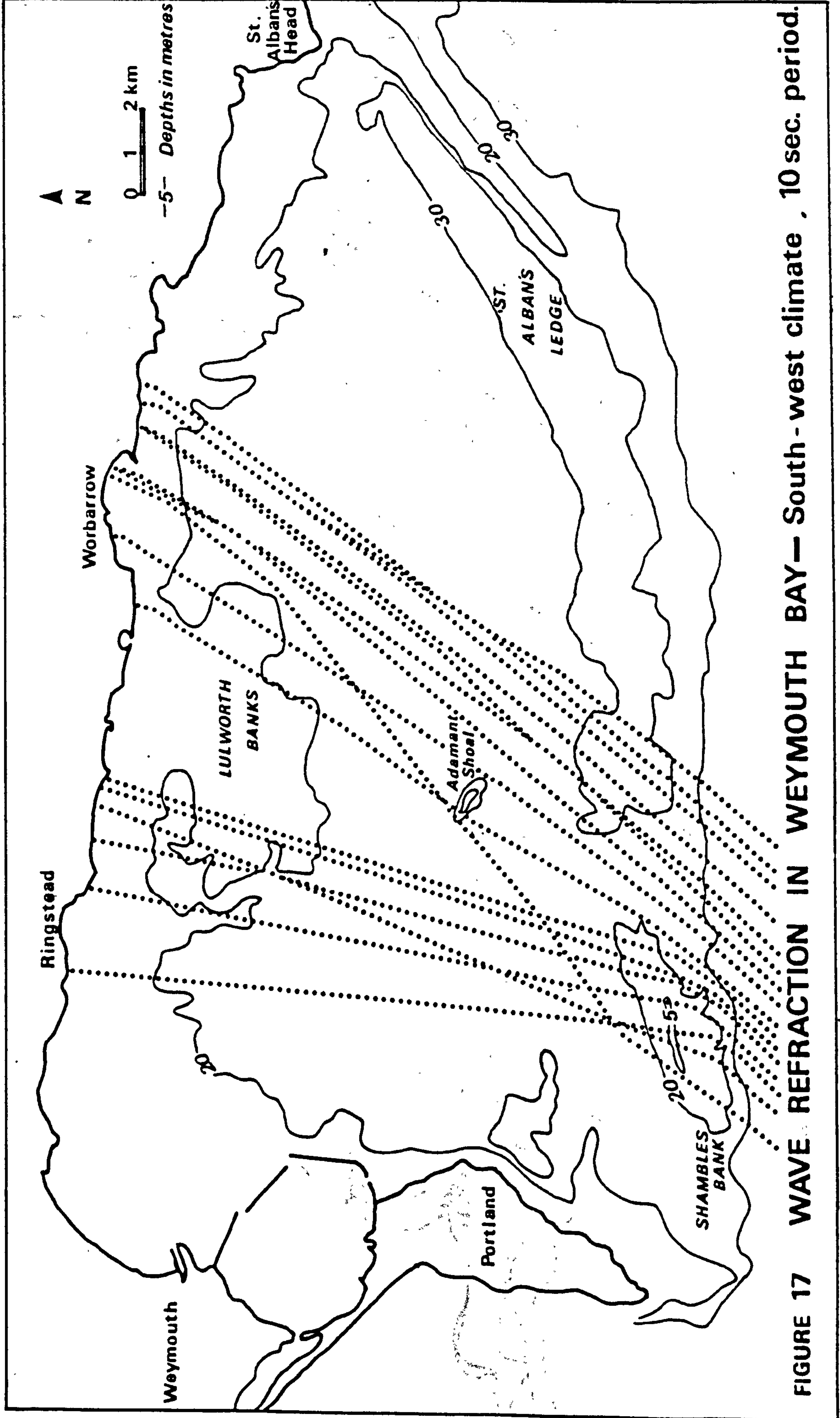


FIGURE 16 WIND ROSE

SEPTEMBER 1982 — SEPTEMBER 1984  
(inclusive)



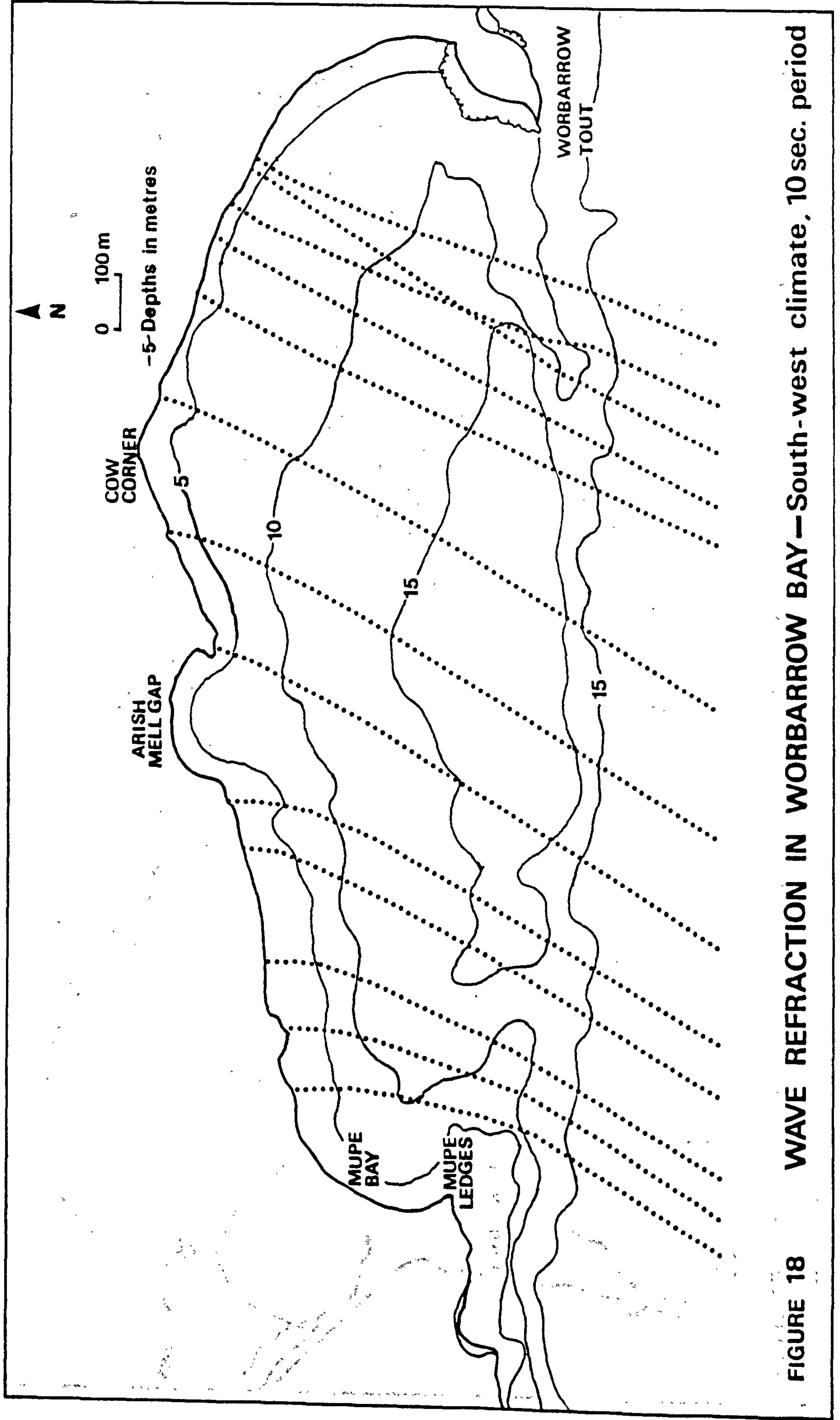


FIGURE 18 WAVE REFRACTION IN WORBARROW BAY—South-west climate, 10 sec. period

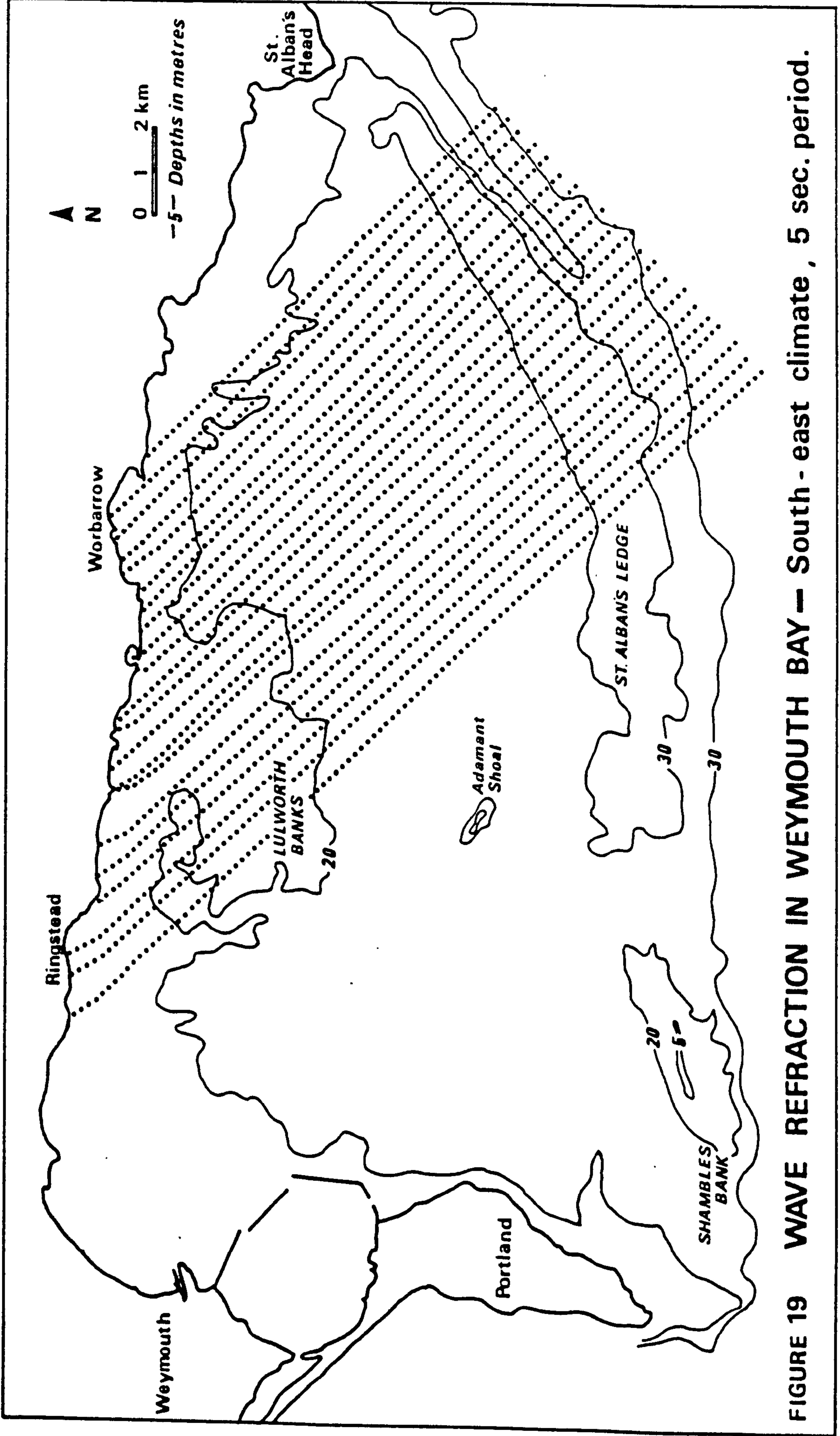
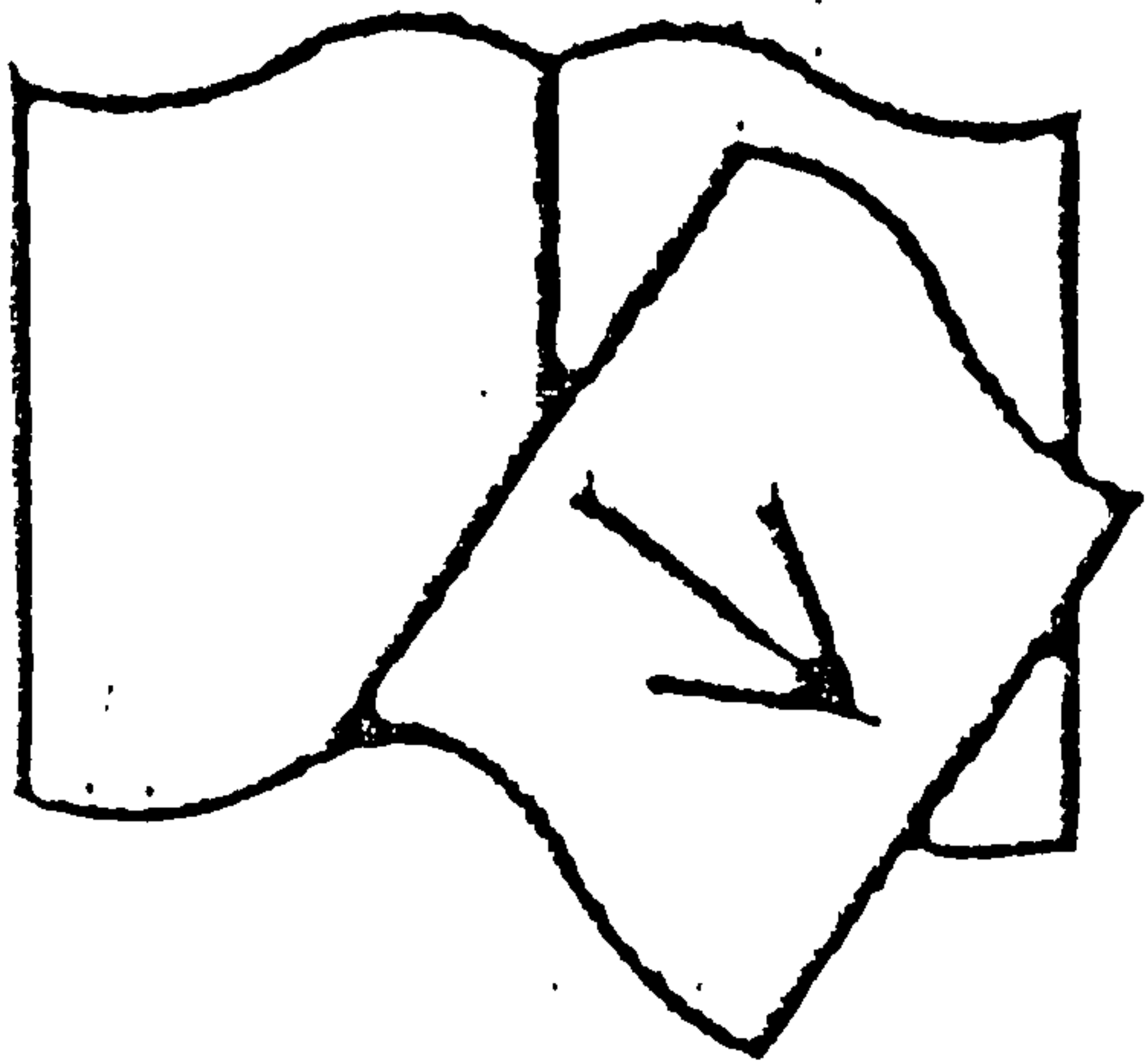


FIGURE 19 WAVE REFRACTION IN WEYMOUTH BAY — South - east climate , 5 sec. period.

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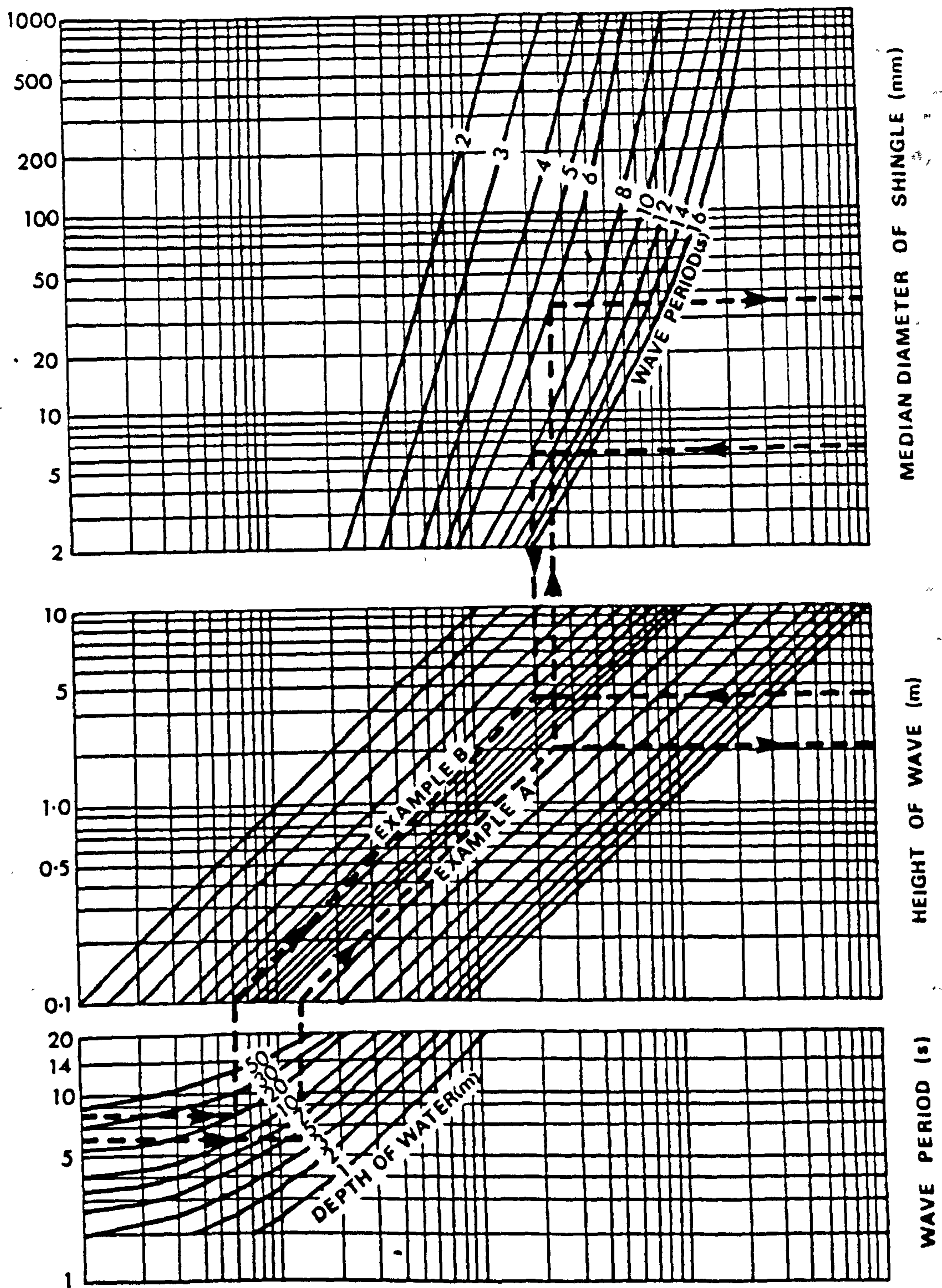
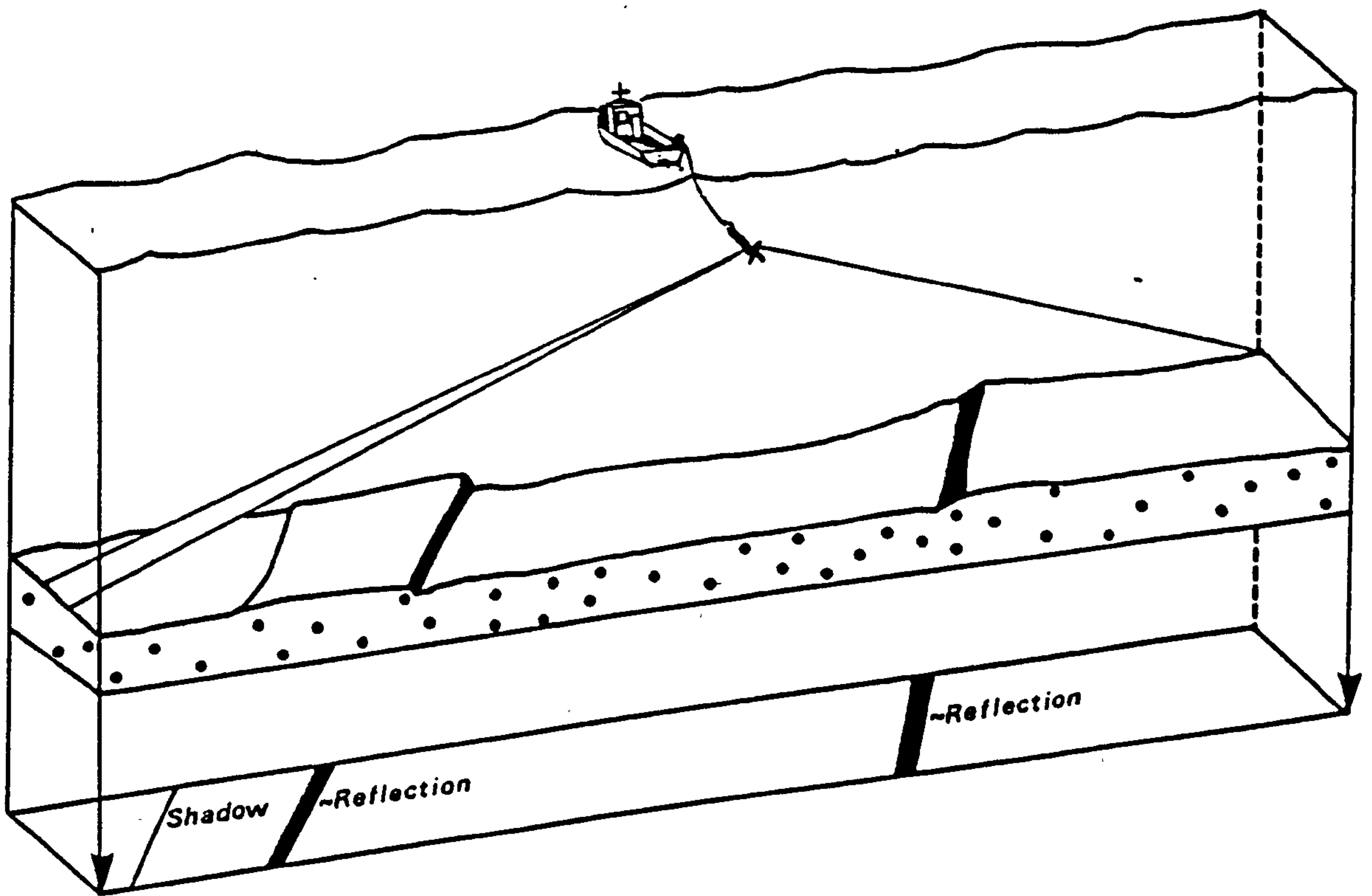
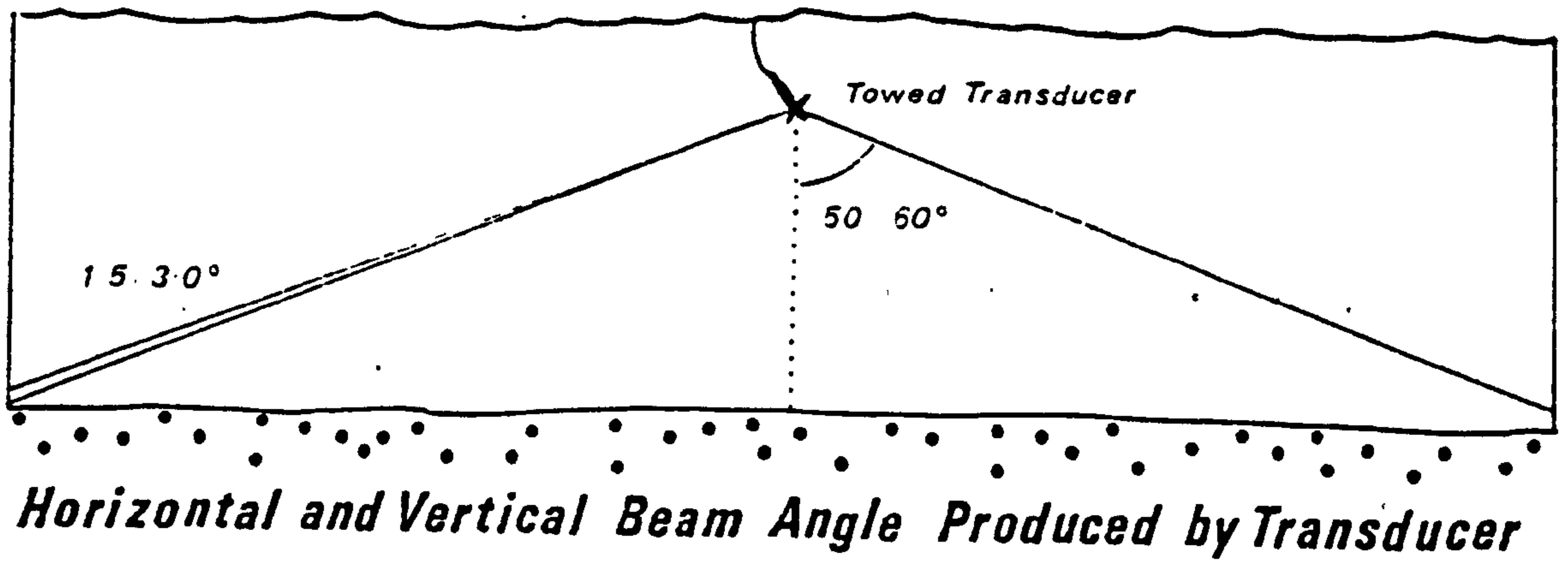


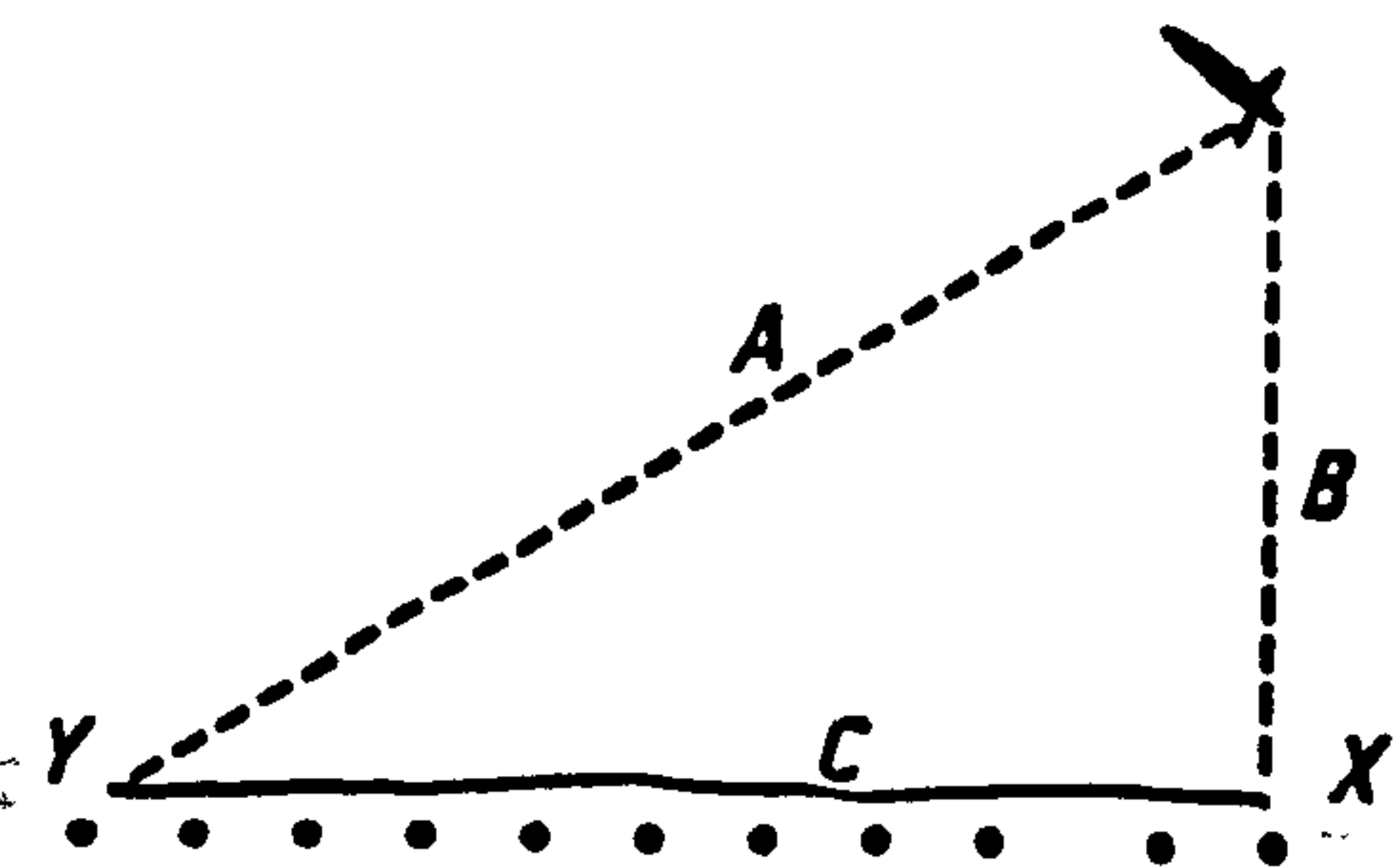
FIGURE 21 THRESHOLD MOVEMENT OF SHINGLE IN OSCILLATING FLOW

[Rance & Warren 1968]



*Sonar — Scan for Seabed Mapping (Somers and Searle, 1984)*

**Slant Range Distortion**



*XY = distance required (C)  
 A = distance measured  
 $\therefore C = \sqrt{A^2 - B^2}$*

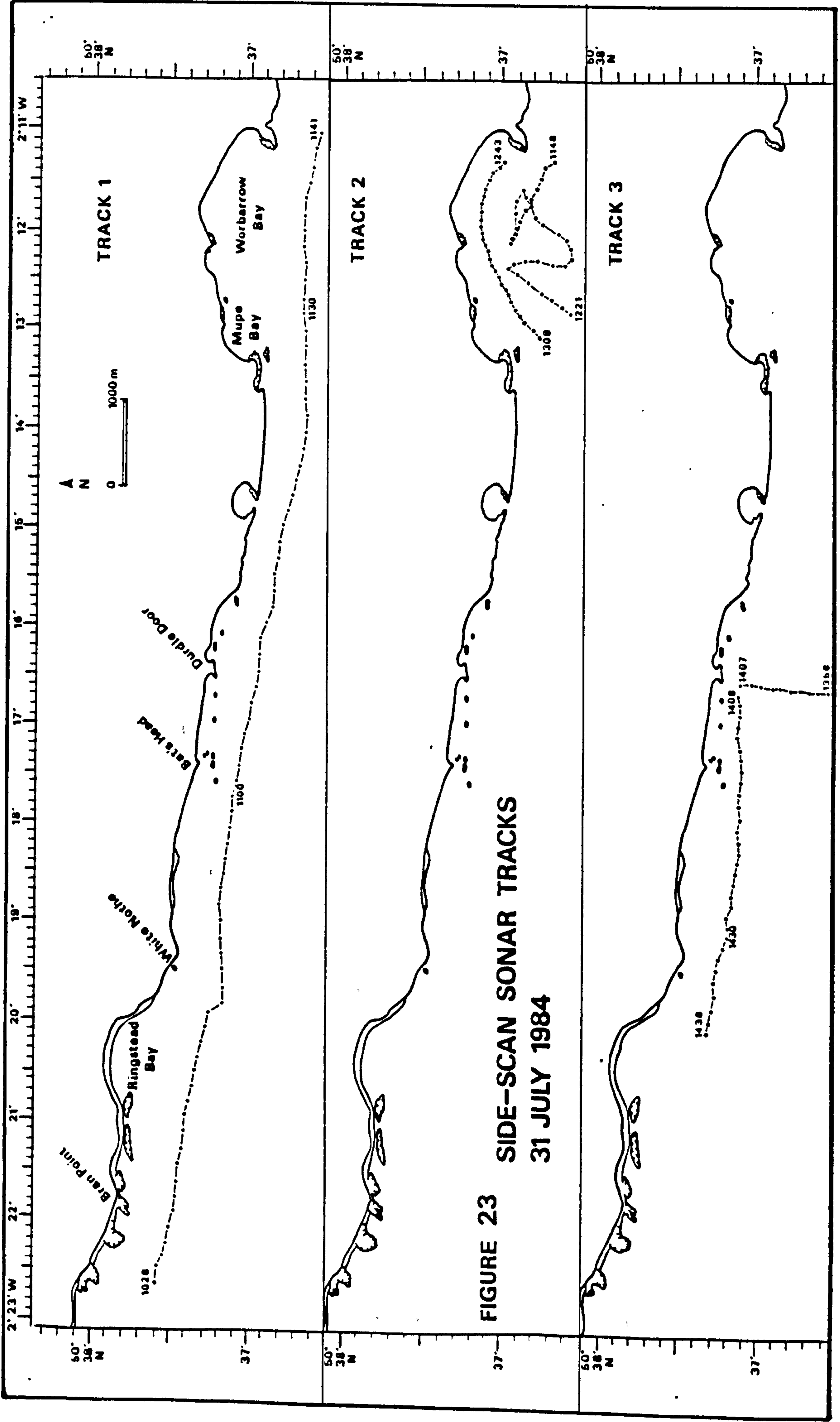
**FIGURE 22**

**SOME PRINCIPLES OF SIDE SCAN SONAR**



PLATE 6. MUPE ROCKS TO WORBARROW TOUT (ALONG LINE OF SUBMERGED PORTLAND STONE BARRIER).





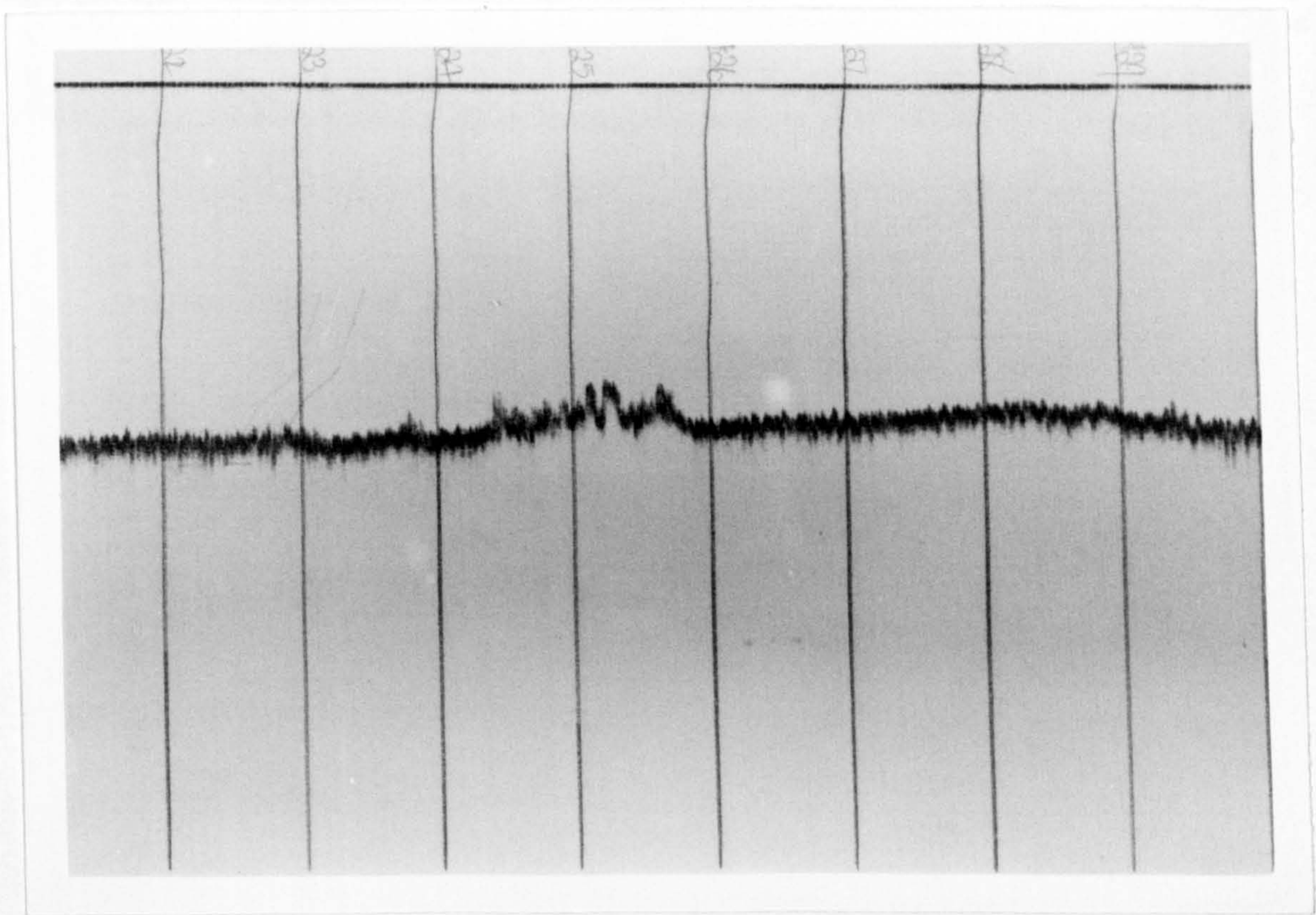
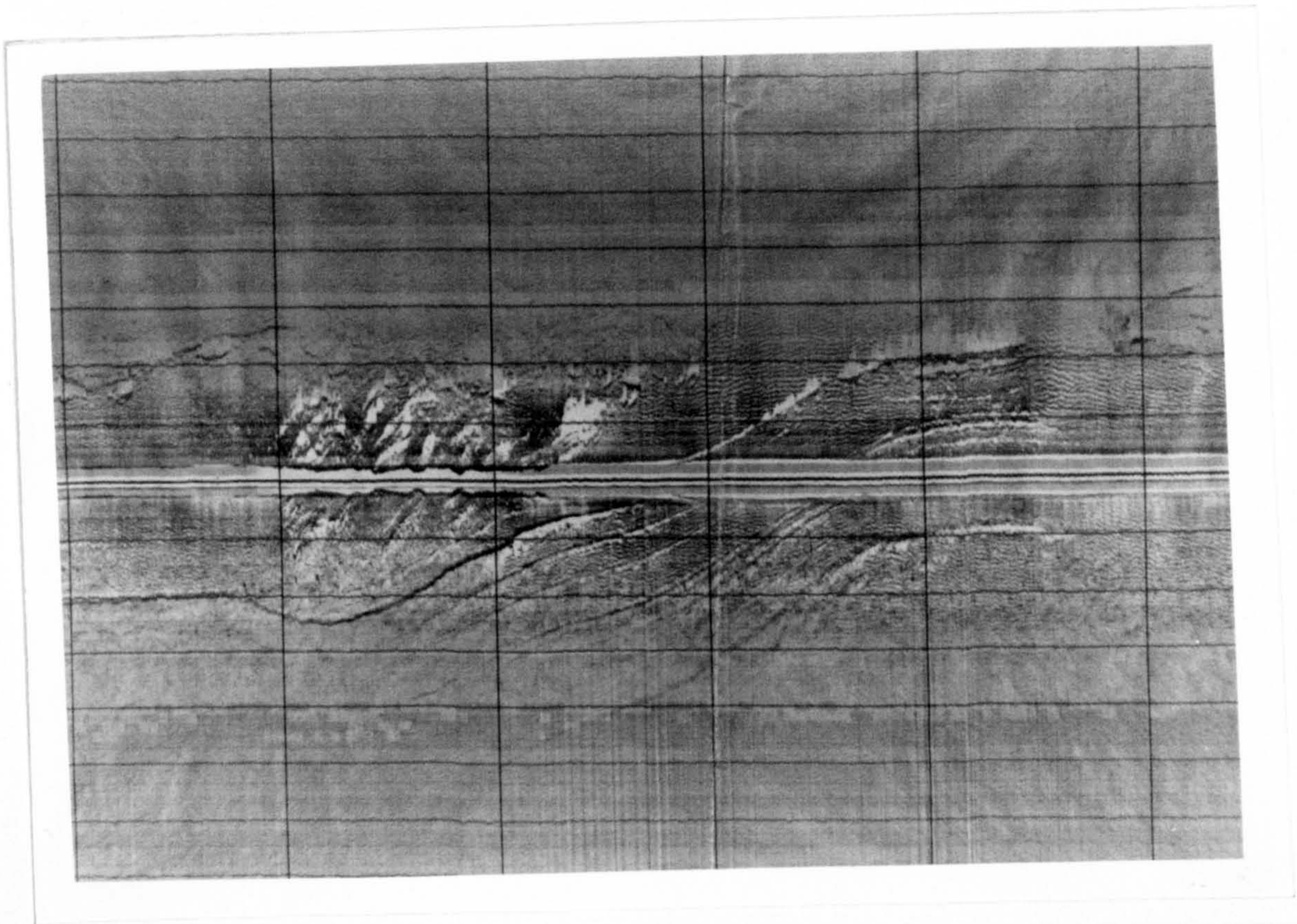


PLATE 7. SONOGRAPH AND ECHOGRAPH OF THE PURBECK MONOCLINE (EAST OF BAT'S HEAD).

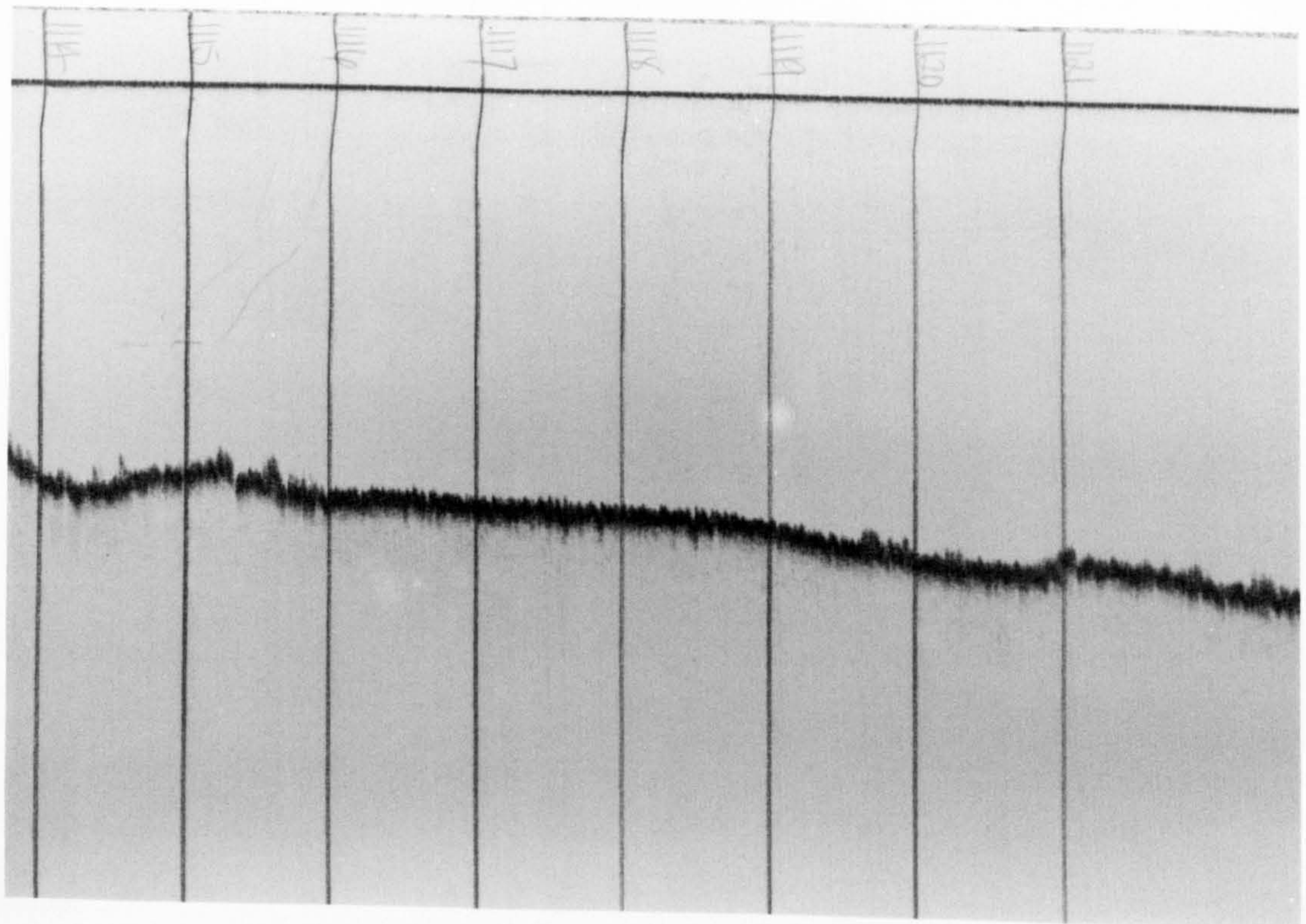
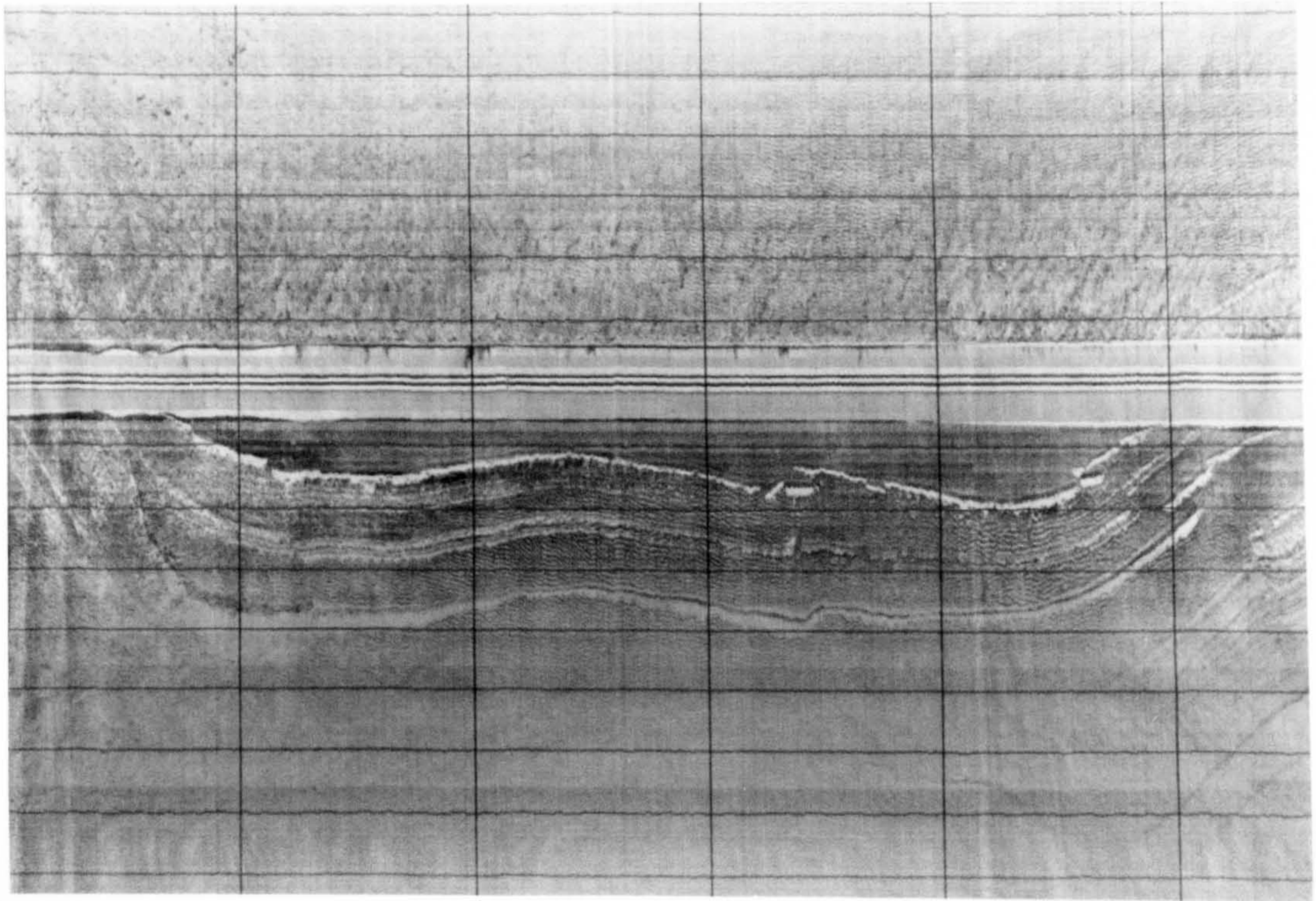


PLATE 8. SONOGRAPH AND ECHOGRAPH OF SEABED OFF LULWORTH COVE.

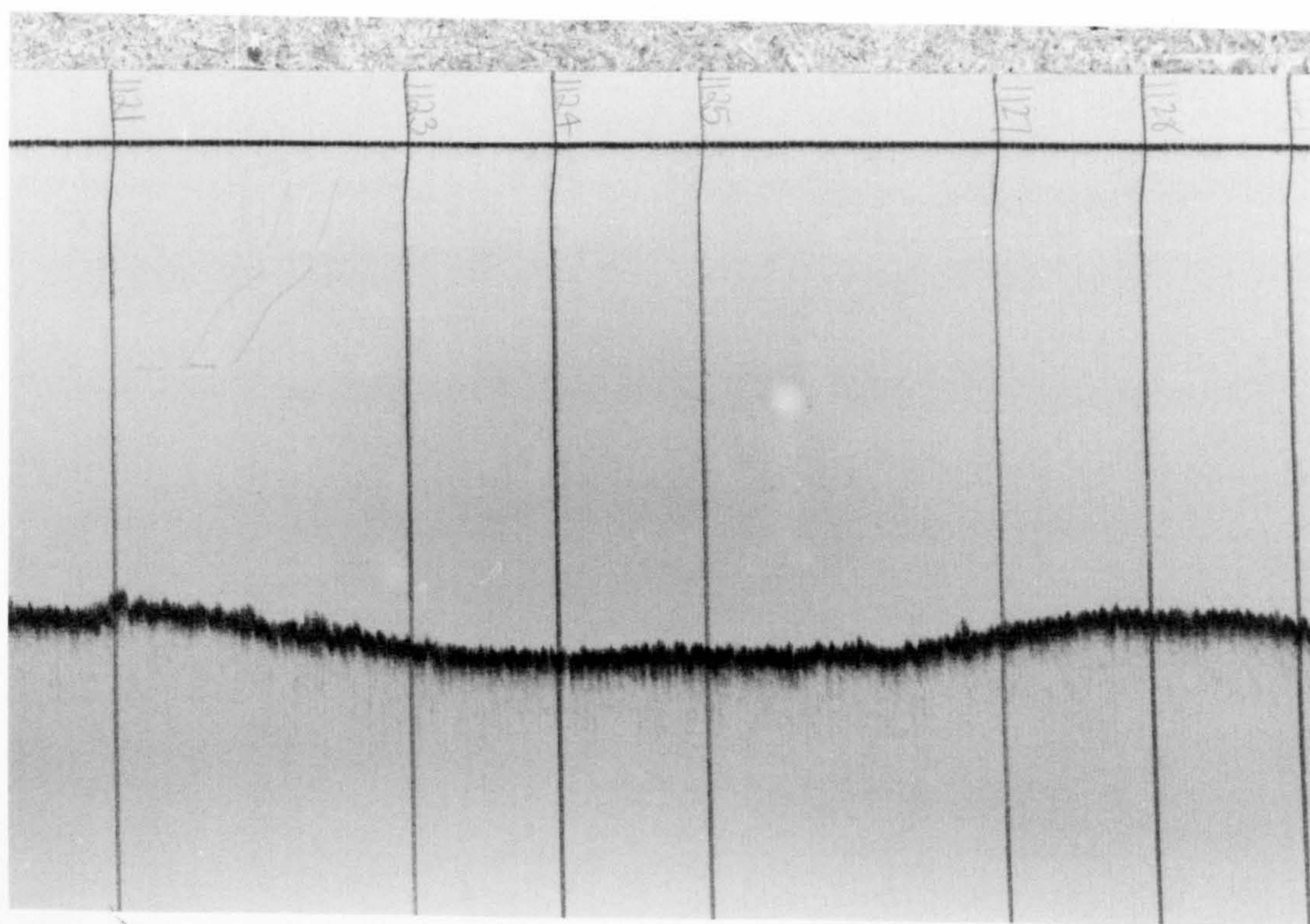
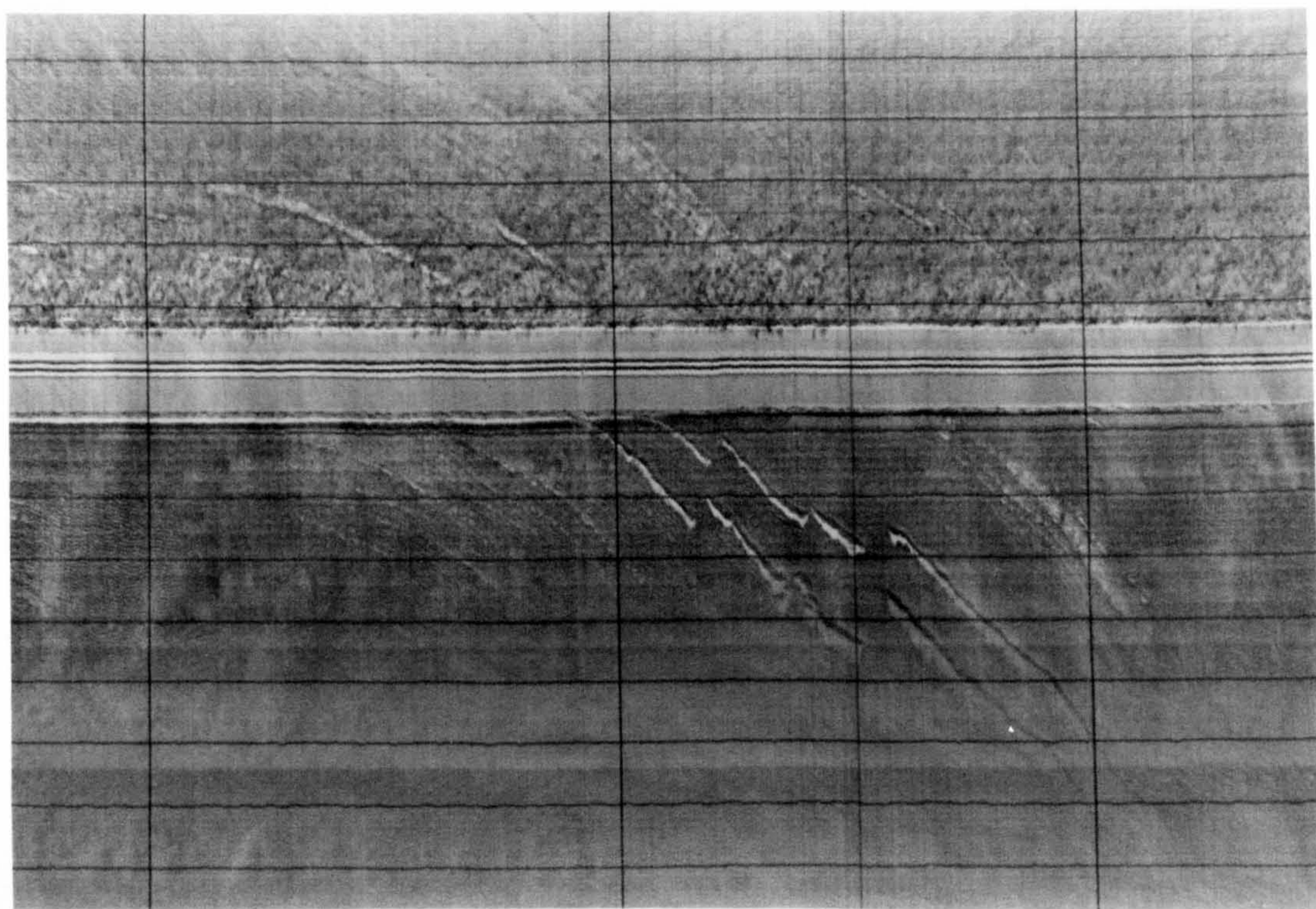


PLATE 9. SONOGRAPH AND ECHOGRAPH OF FLAT BED SANDS, WORBARROW BAY.

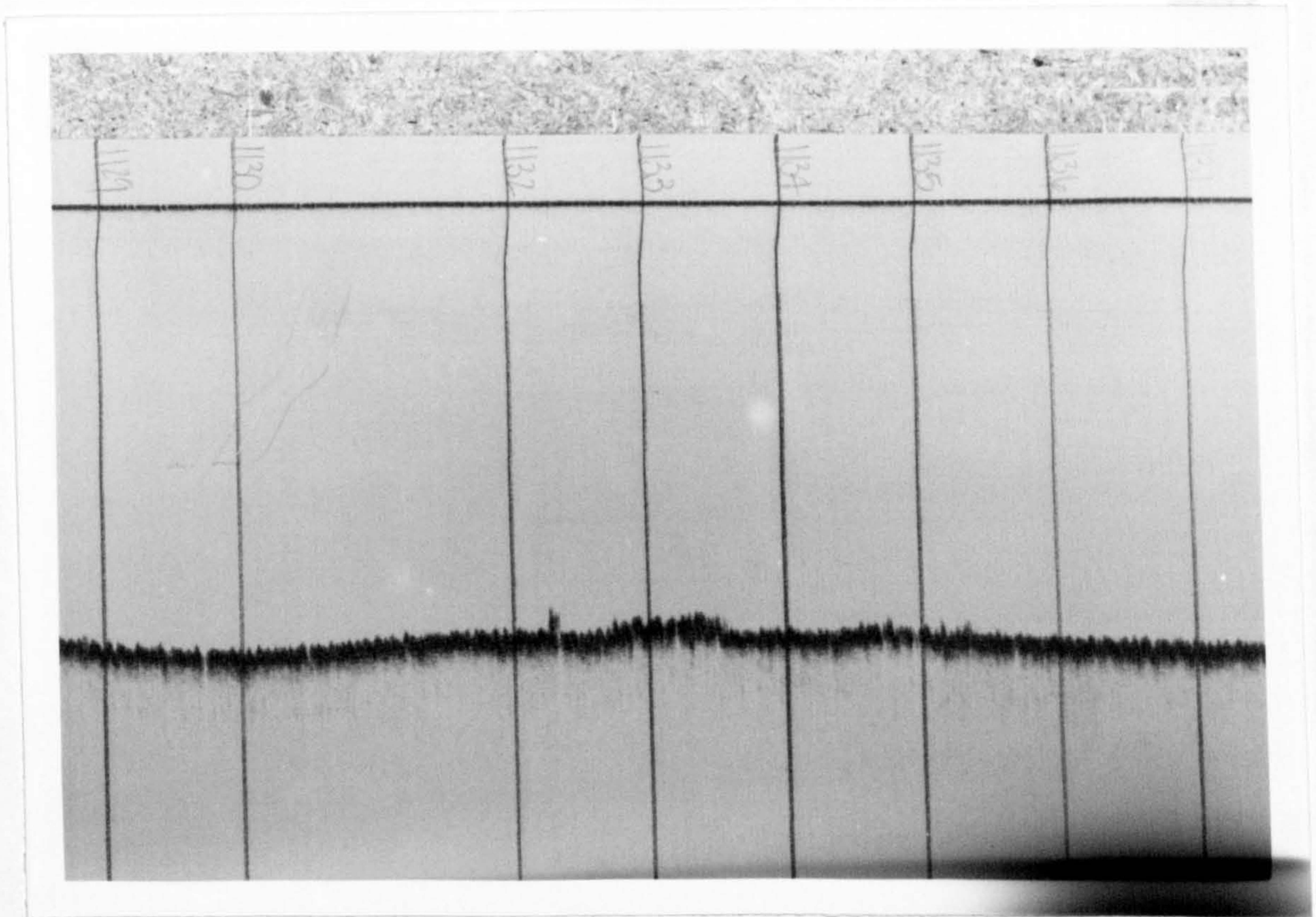
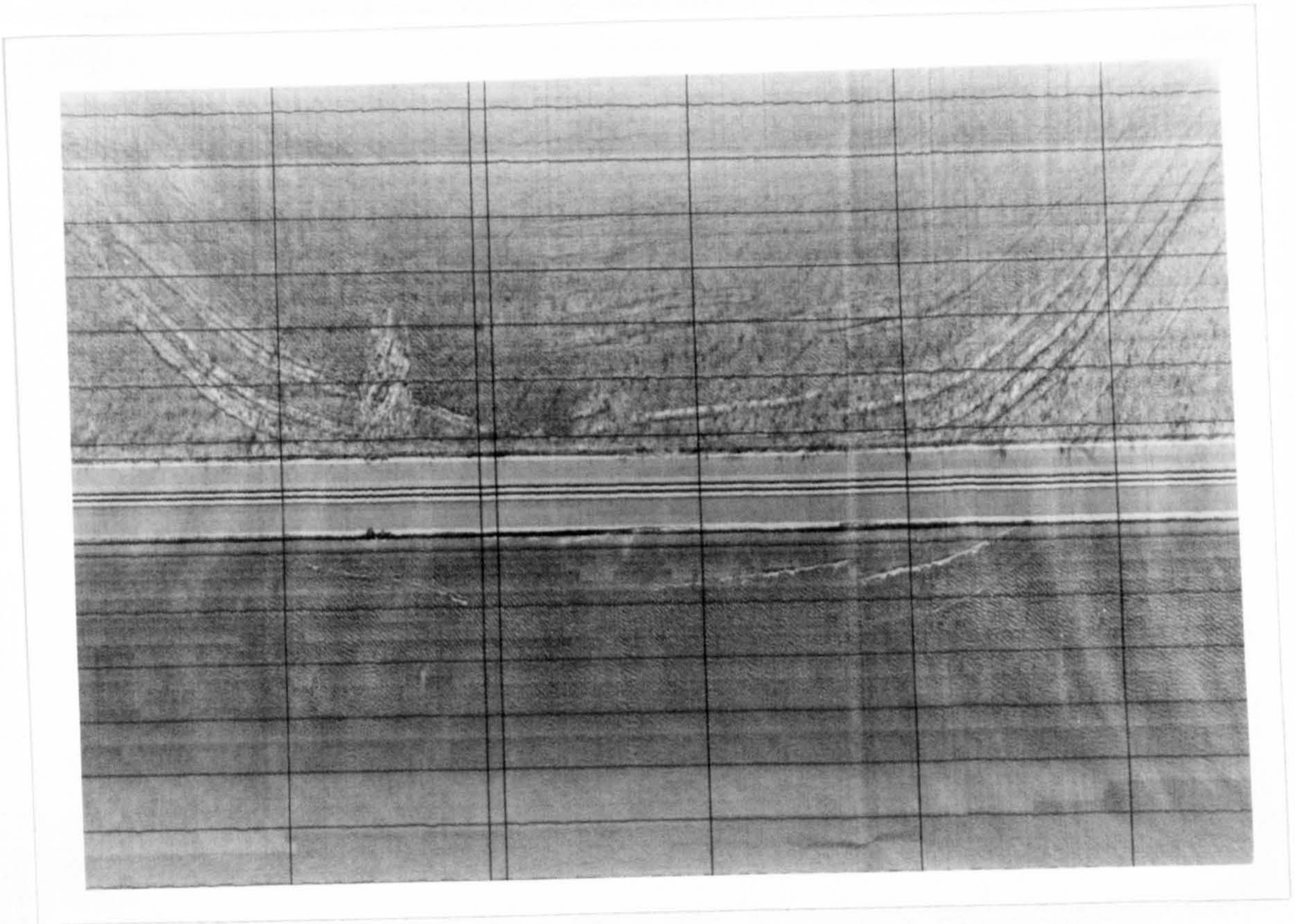


PLATE 10. SONOGRAPH AND ECHOGRAPH OF SUBMERGED PORTLAND STONE REEF OPPOSITE ARISH MELL GAP, WORBARROW BAY.

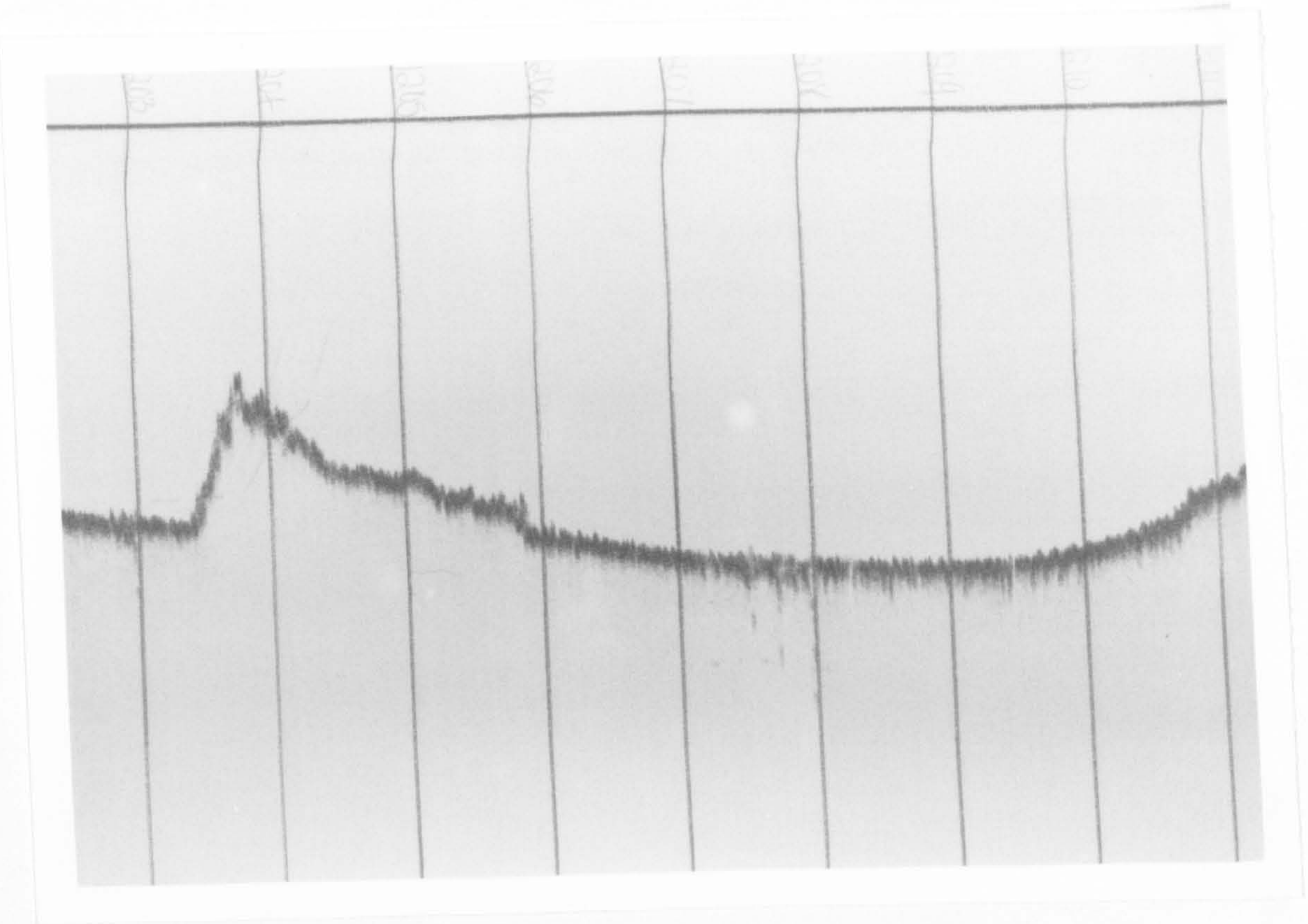
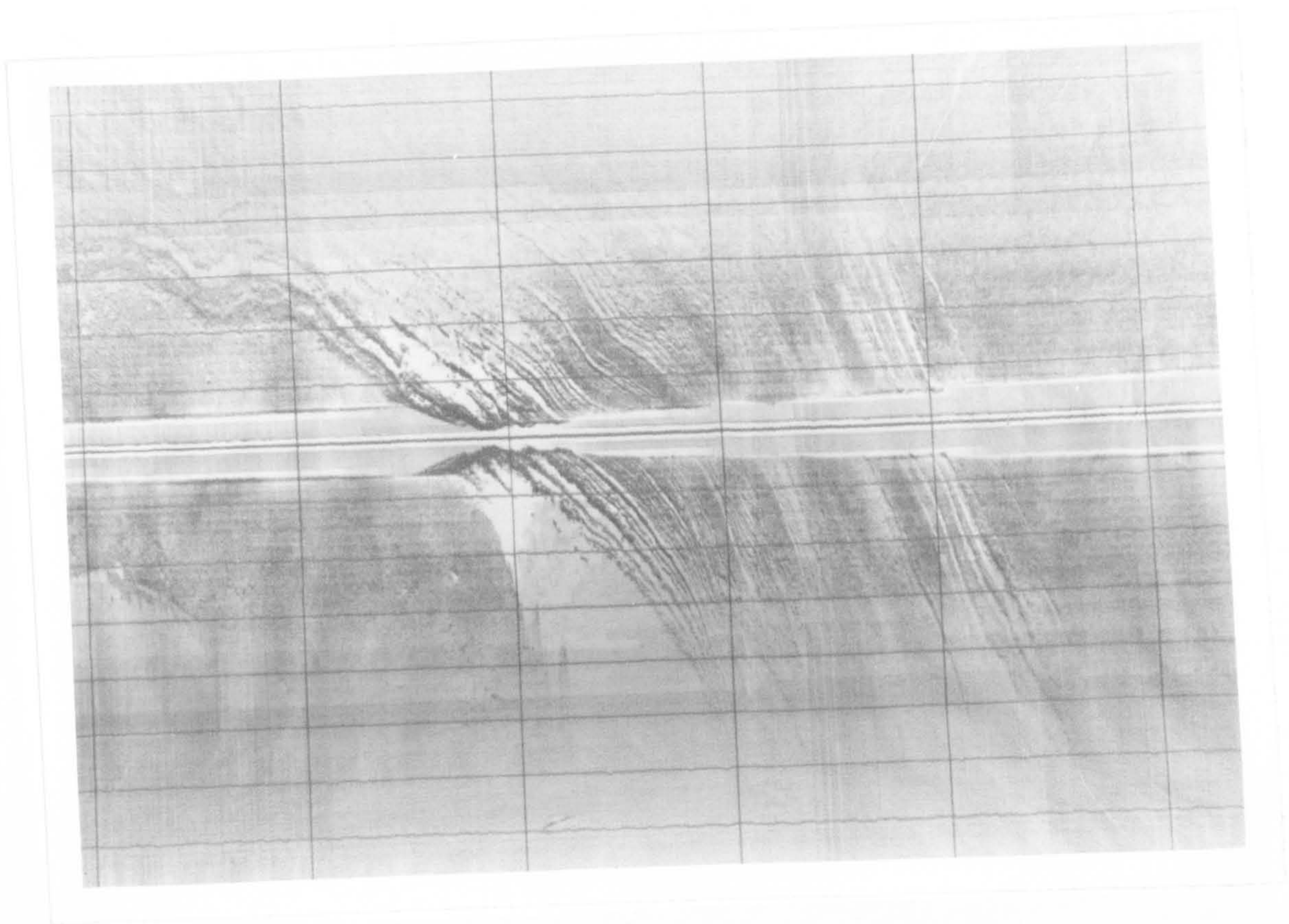


PLATE II. SONOGRAPH AND ECHOGRAPH OF PORTLAND STONE REEF WITH RIPPLED AND FLAT BED SANDS.

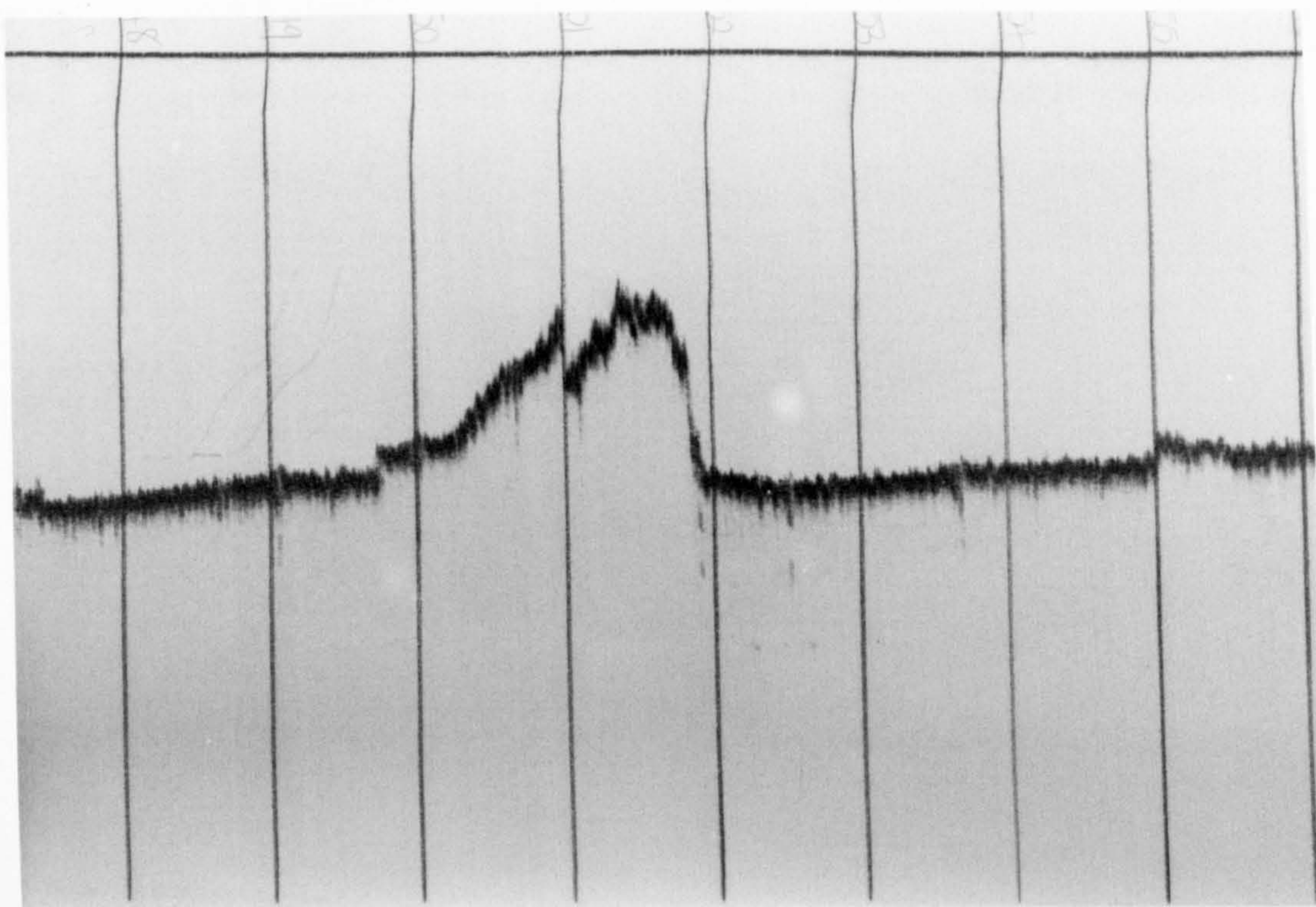
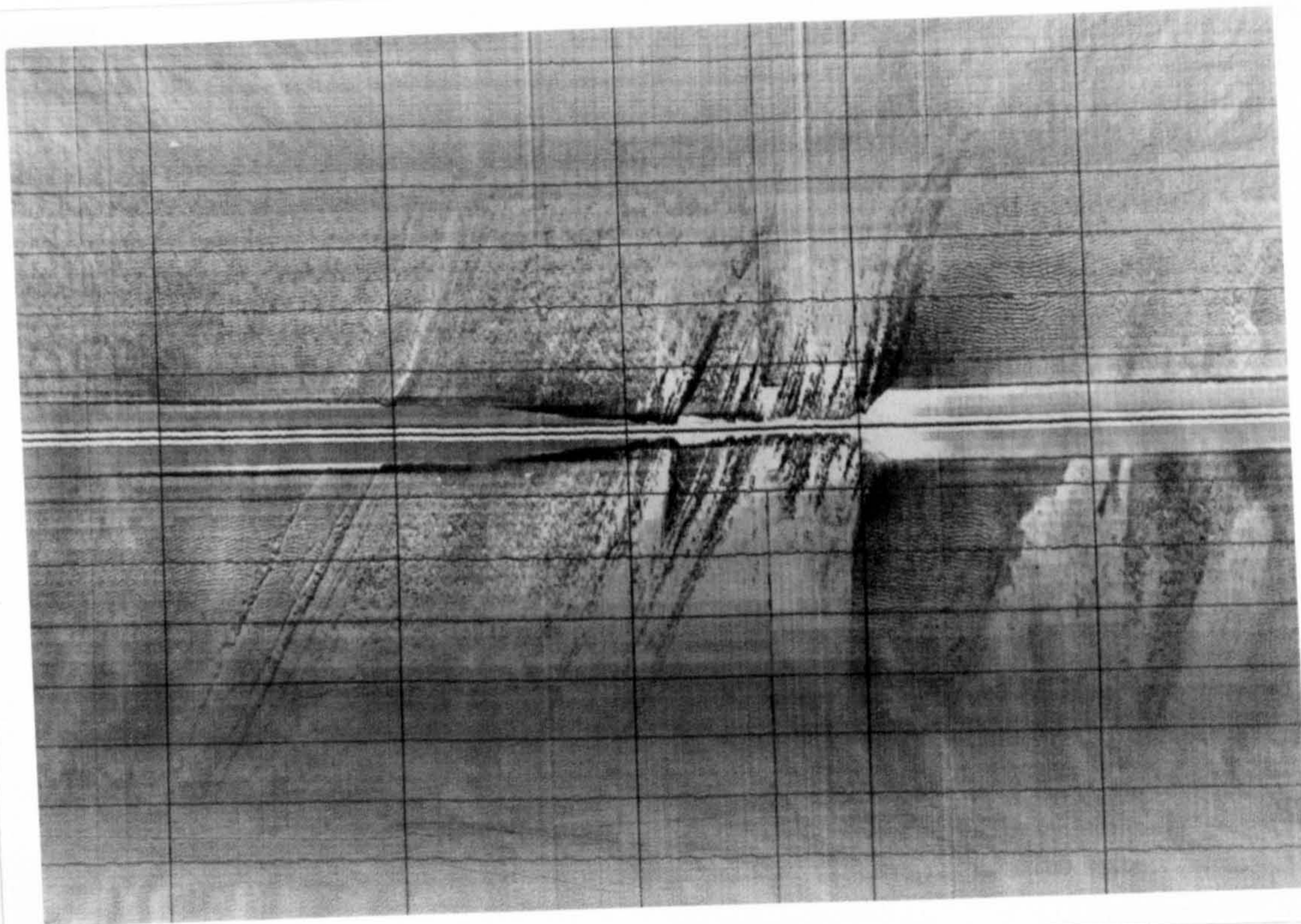


PLATE 12. SONOGRAPH AND ECHOGRAPH OF THE PORTLAND STONE BARRIER,  
WESTERN SECTION OF WORBARROW BAY.

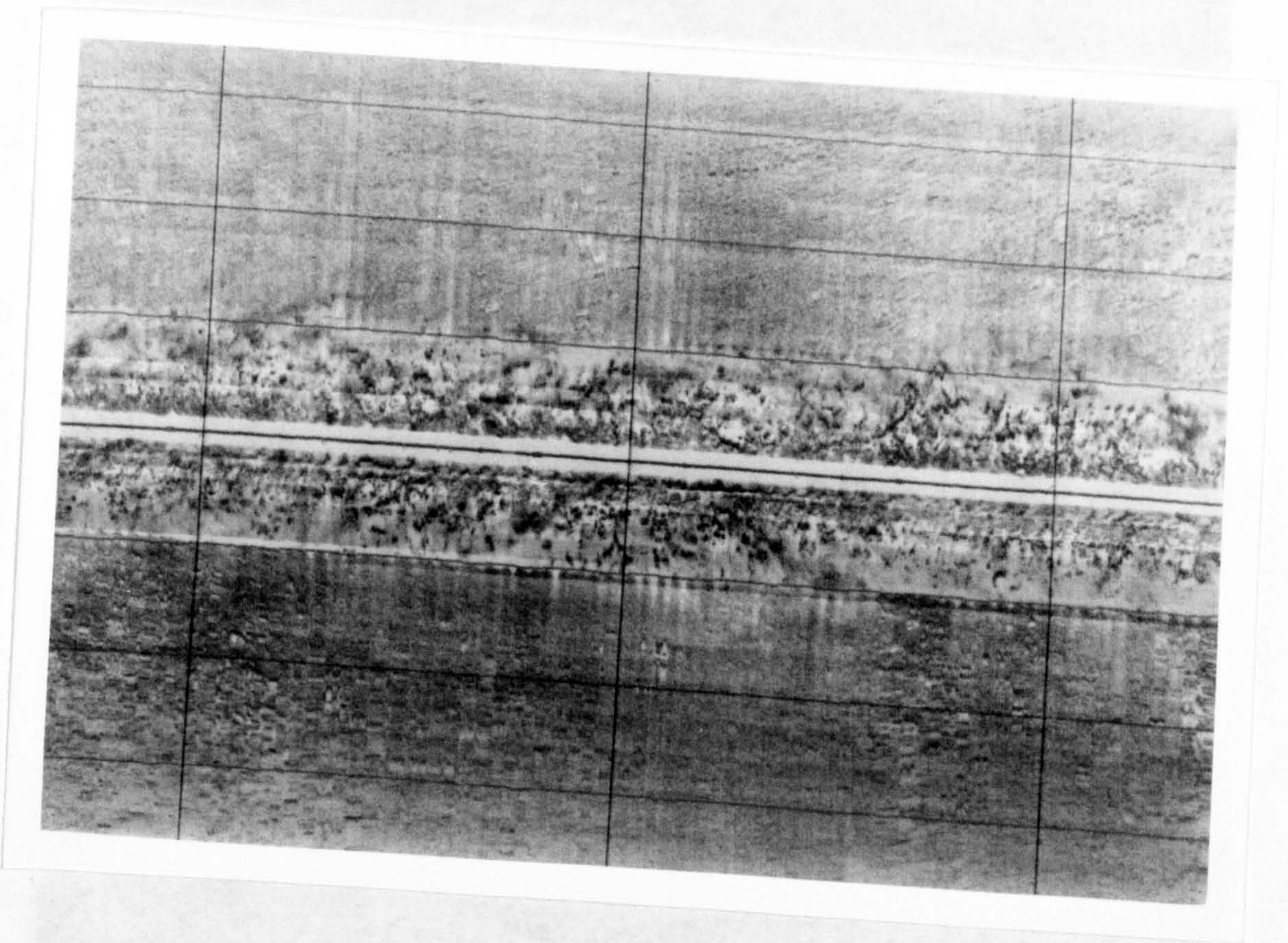


PLATE 13. SONOGRAPH ILLUSTRATING YAW DISTORTION OVER BOULDER  
FIELD, OFF COW CORNER, WORBARROW BAY.



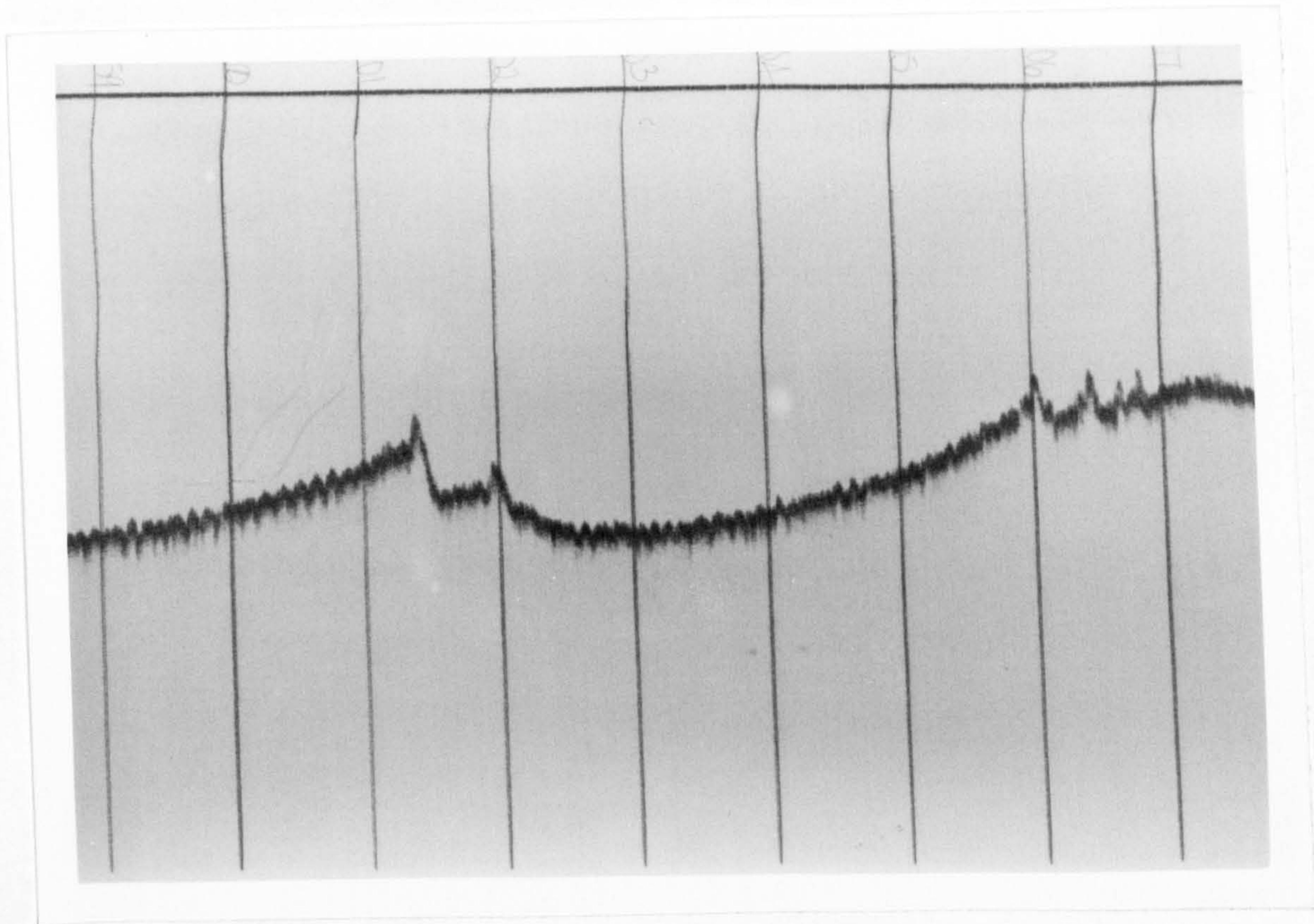
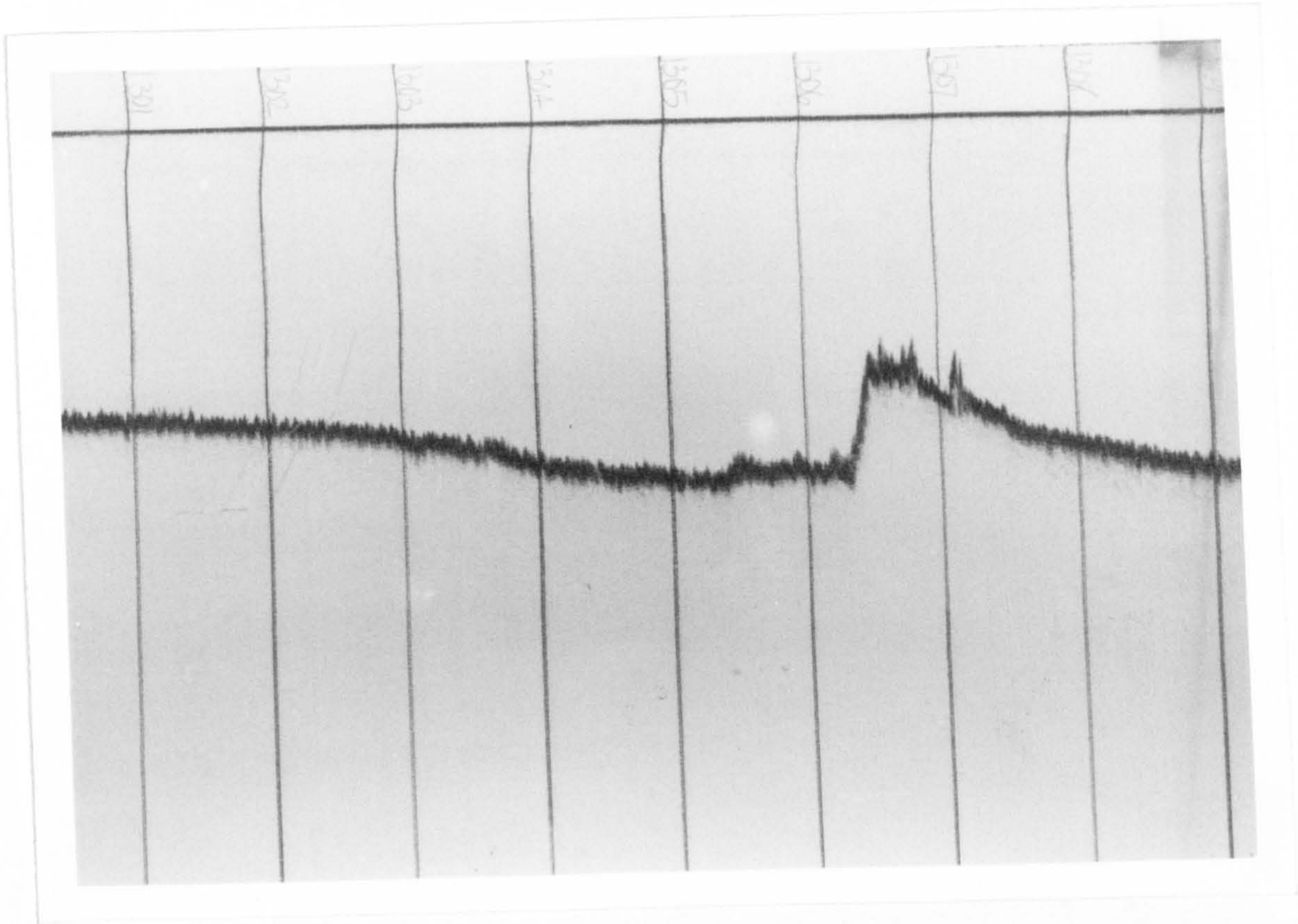


PLATE 14. ECHOGRAPH OF WESTERN EXTENT OF PORTLAND STONE BARRIER,  
 MUPE ROCKS/MUPE BAY.  
 PLATE 15. ECHOGRAPH OFF DURDLE DOOR.

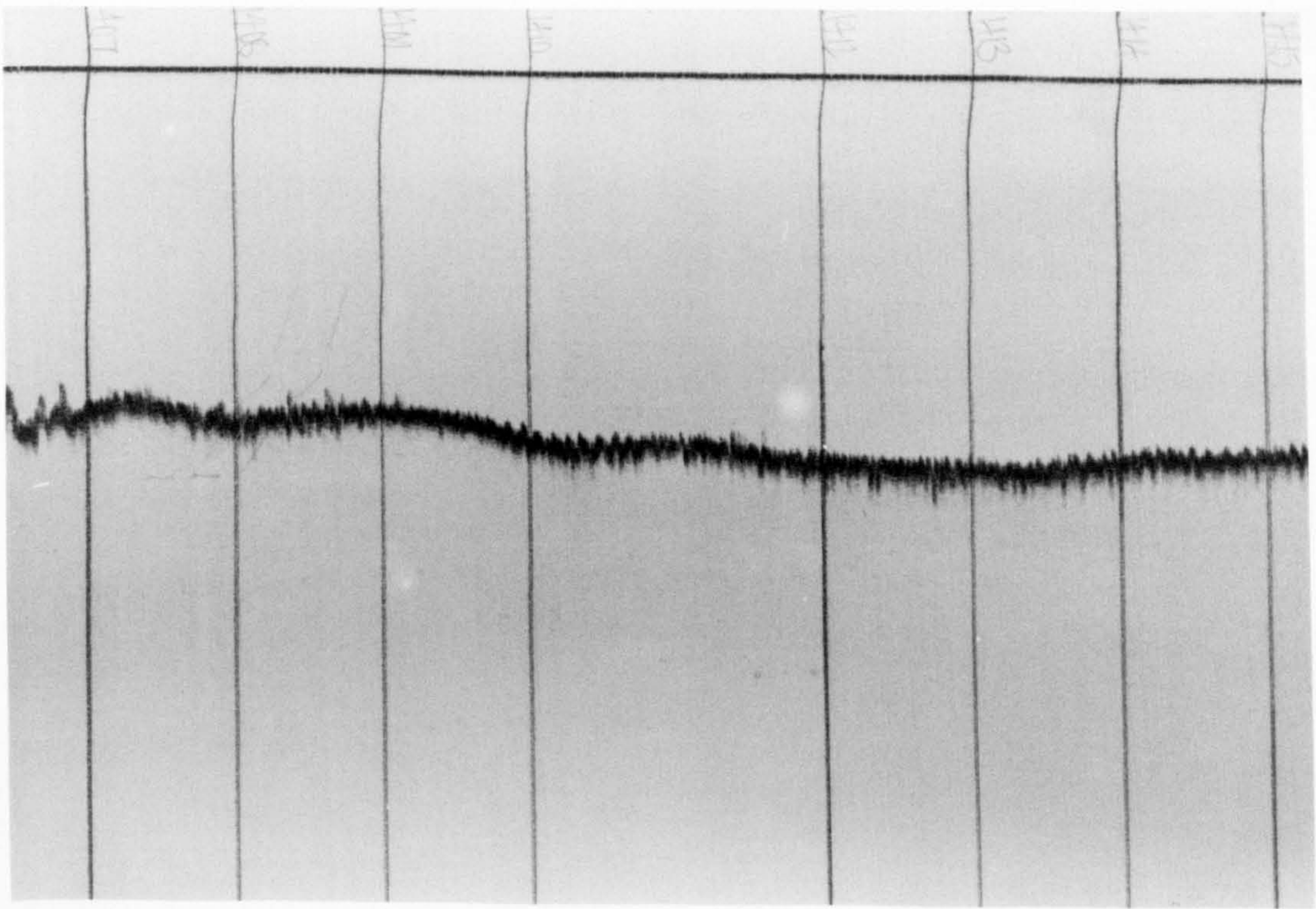
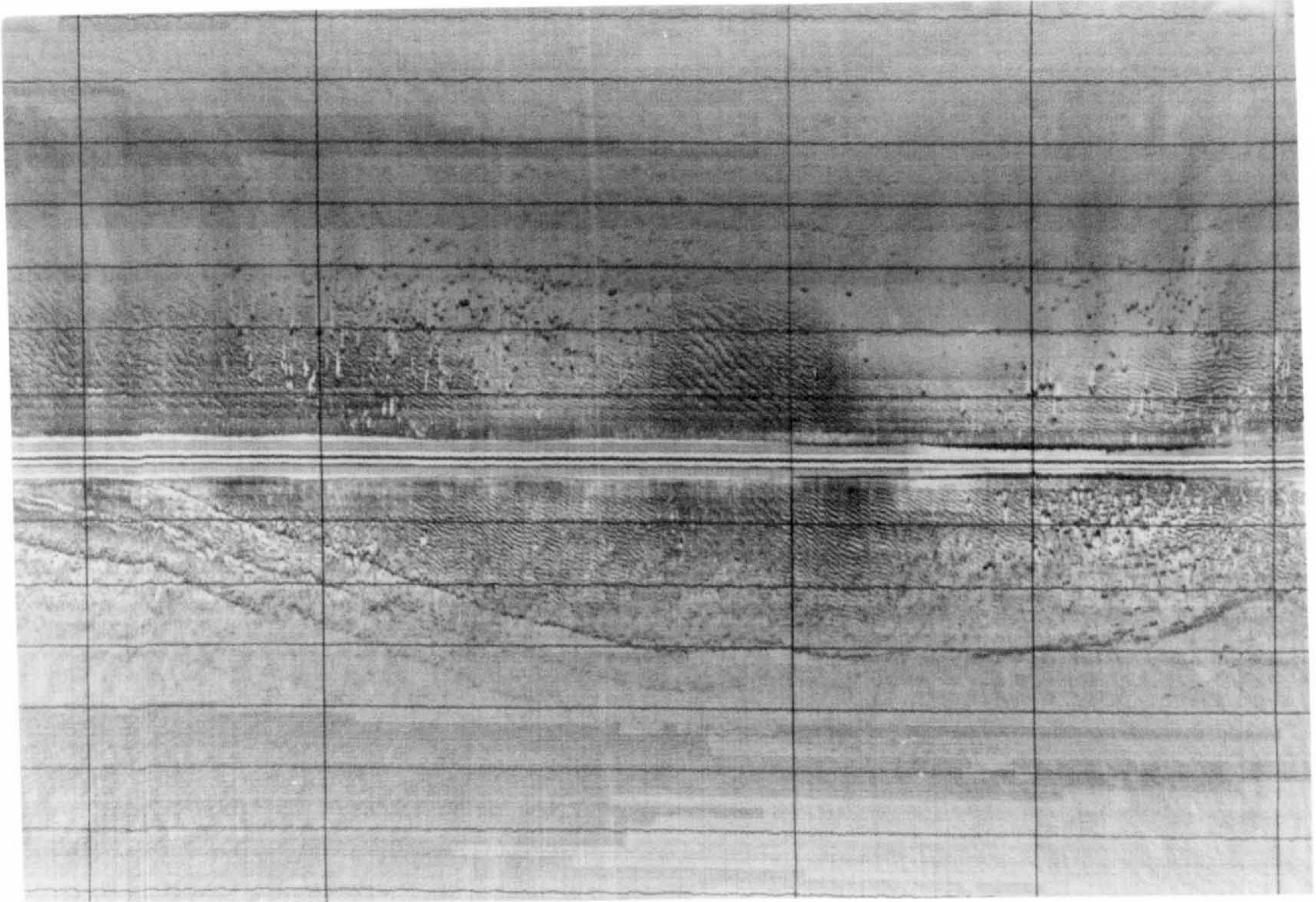
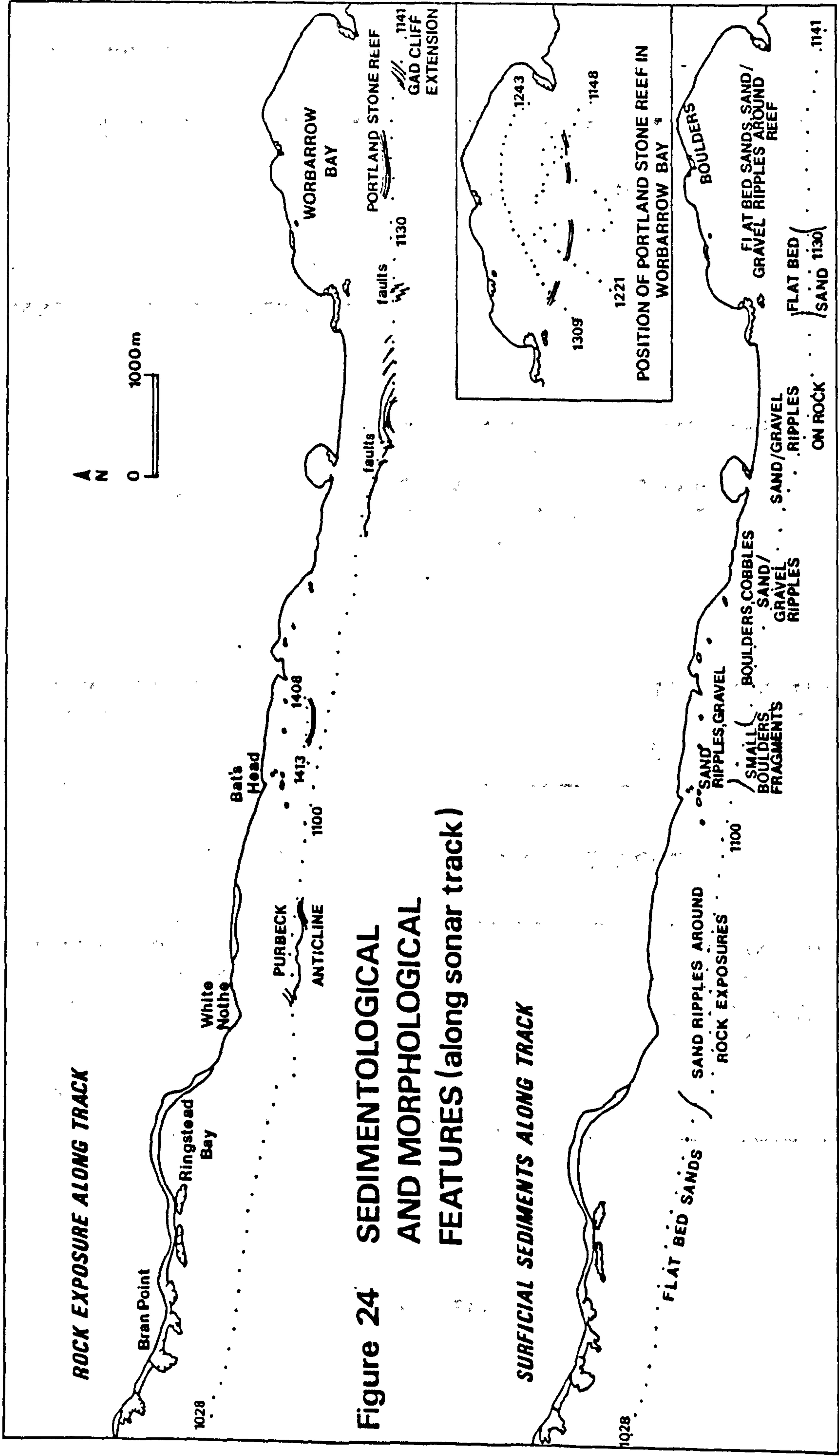


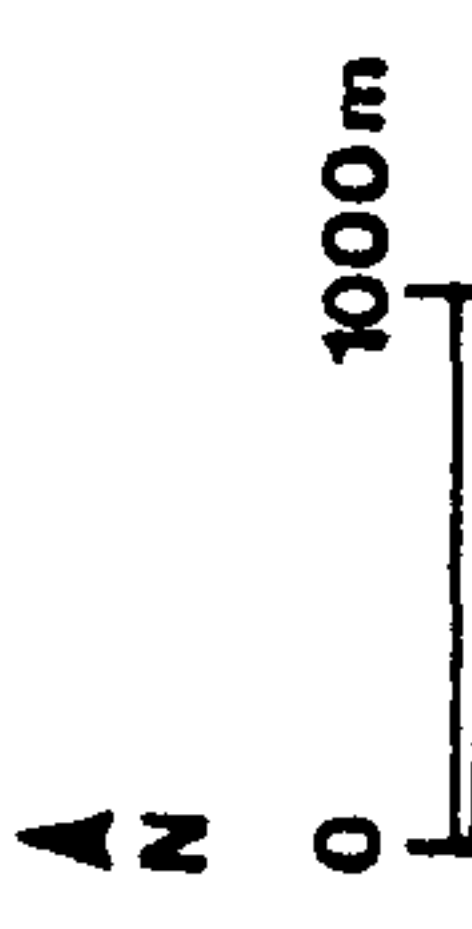
PLATE 16. SONOGRAPH AND ECHOGRAPH OF AREA OFF SWYRE HEAD, DURDLE DOOR BAY.



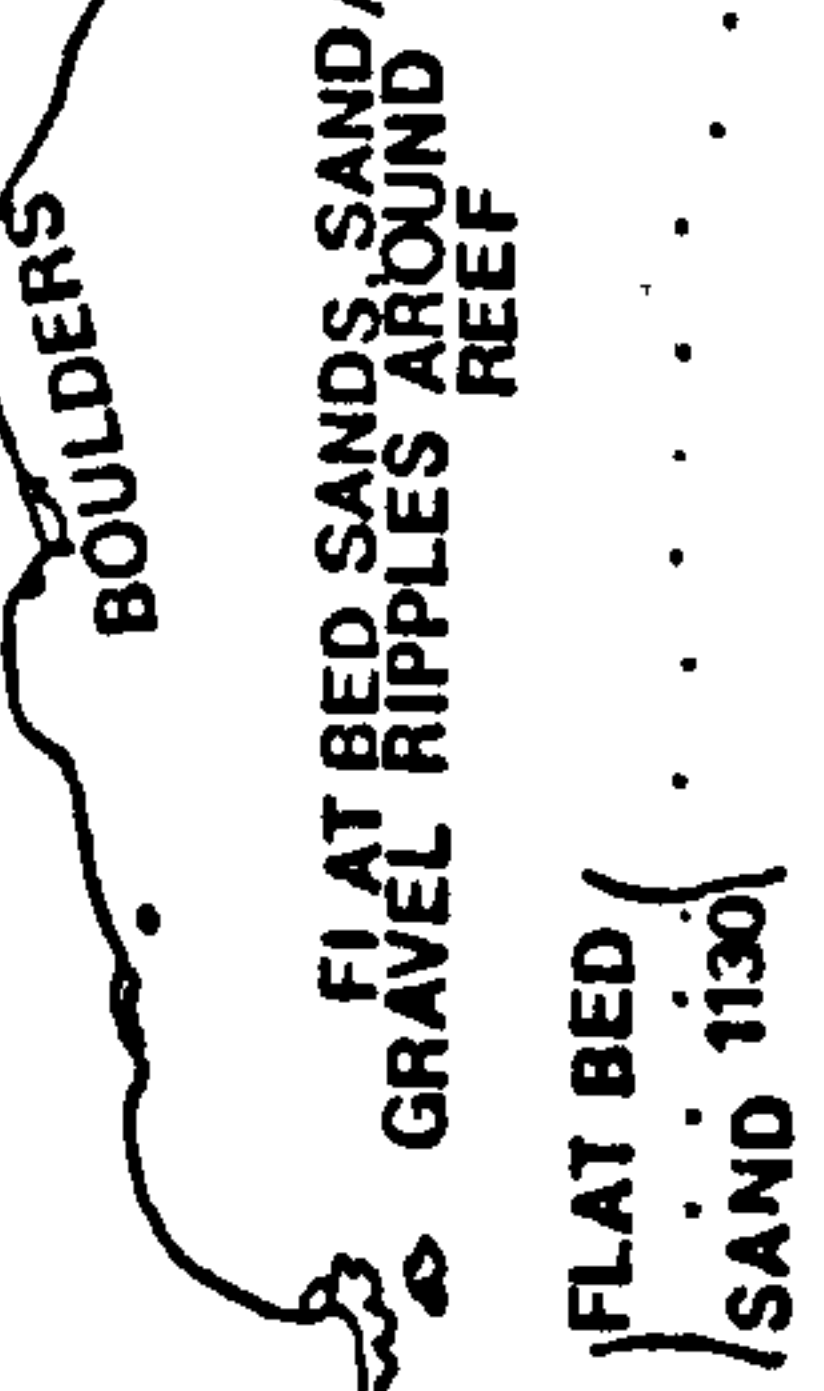
**ROCK EXPOSURE ALONG TRACK**

**Figure 24 SEDIMENTOLOGICAL AND MORPHOLOGICAL FEATURES (along sonar track)**

**SURFICIAL SEDIMENTS ALONG TRACK**



**POSITION OF PORTLAND STONE REEF IN WORBARROW BAY**



**FIGURE 25**

**FACTORS AFFECTING COASTAL CLIFF EROSION**

**(SUNAMURA 1977)**

**WAVE ENERGY IN DEEP WATER**

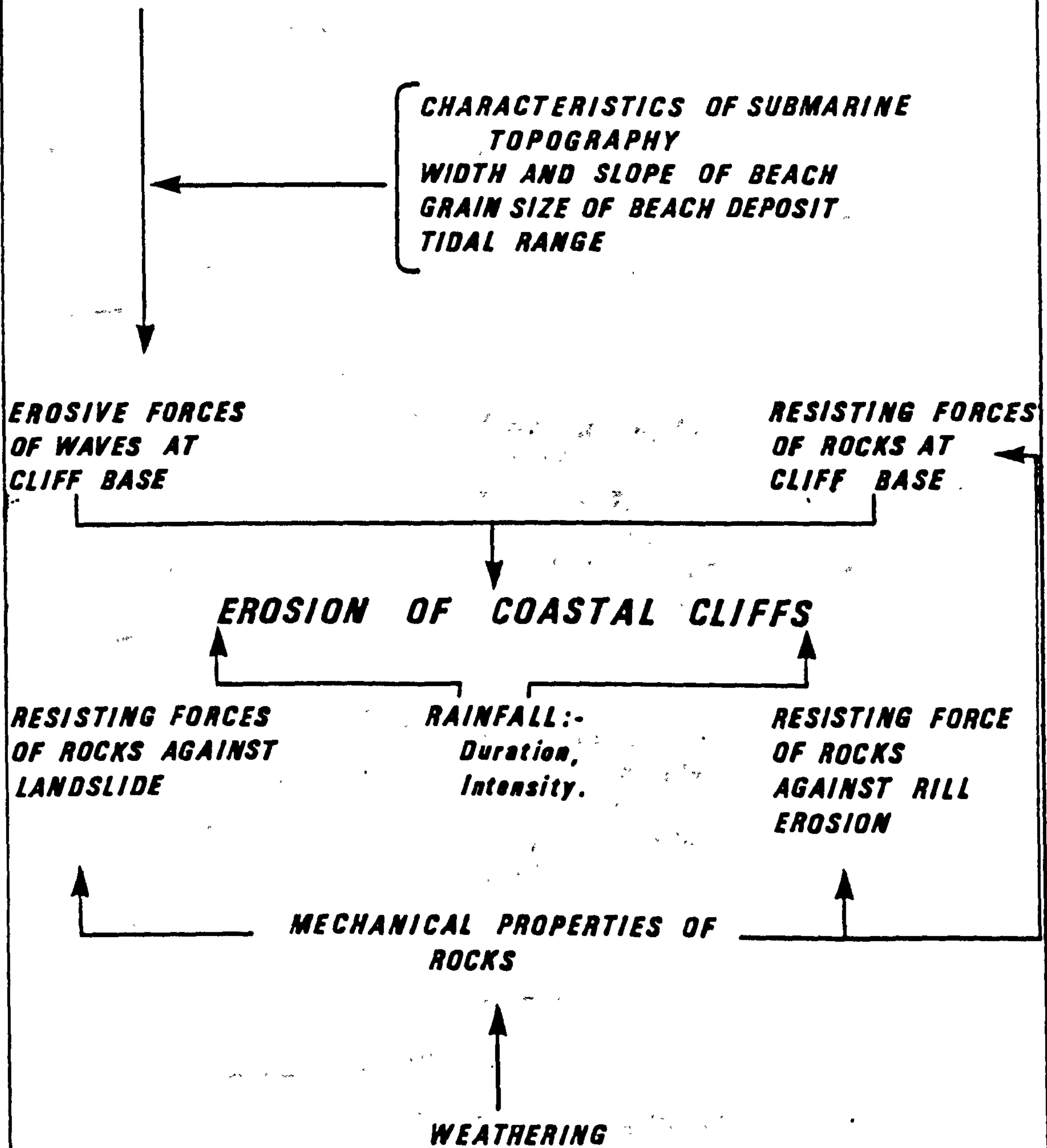


FIGURE  
26

**CLIFF TYPE ACCORDING TO PRÊCHEUR (1960)**

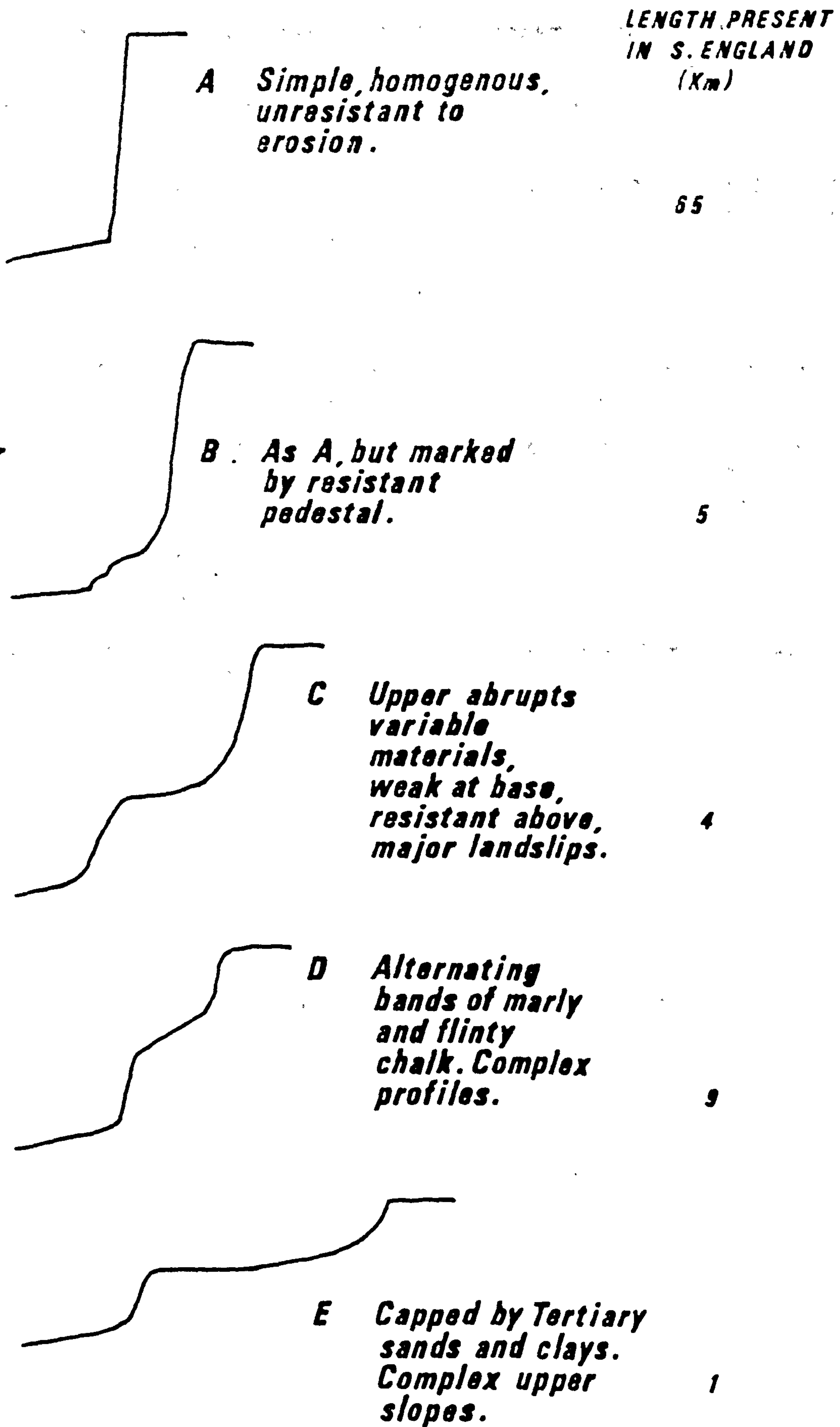


TABLE 5

MAJOR CATEGORIES OF CHALK CLIFFED COAST-ENGLISH CHANNEL  
(MAY 1964)

CATE- GORY	MAIN FEATURES	CLIFF HEIGHT	LENGTH km. (BRITAIN)
I	Simple profile & plan, latter often similar to beach plan forms. Slope angles exceed 75 deg. Extensive platforms are common.	Less than 31m	44 (15 of which are protected by walls)
II	As I, platforms narrower and less common.	More than 31m	21 km
III	Cliff with basal rocky pedestal, many joints, simple upper profile, but complex plan, with caves, stacks, arches. Platforms common, but may be submerged.	More than 31m	5 (2 of which are protected by walls)
IV	High cliffs with complex profile. Plan usually simple, but boulder fields at foot may affect plan in detail.	More than 31m	4 km
V	High with extensive and complex undercliff. Upper plan related to mass movements, shoreline plan to debris and boulder fields.	More than 31m	9 km
VI	Chalk cliffs capped by Tertiary sands and clays.	Less than 31m	1 km

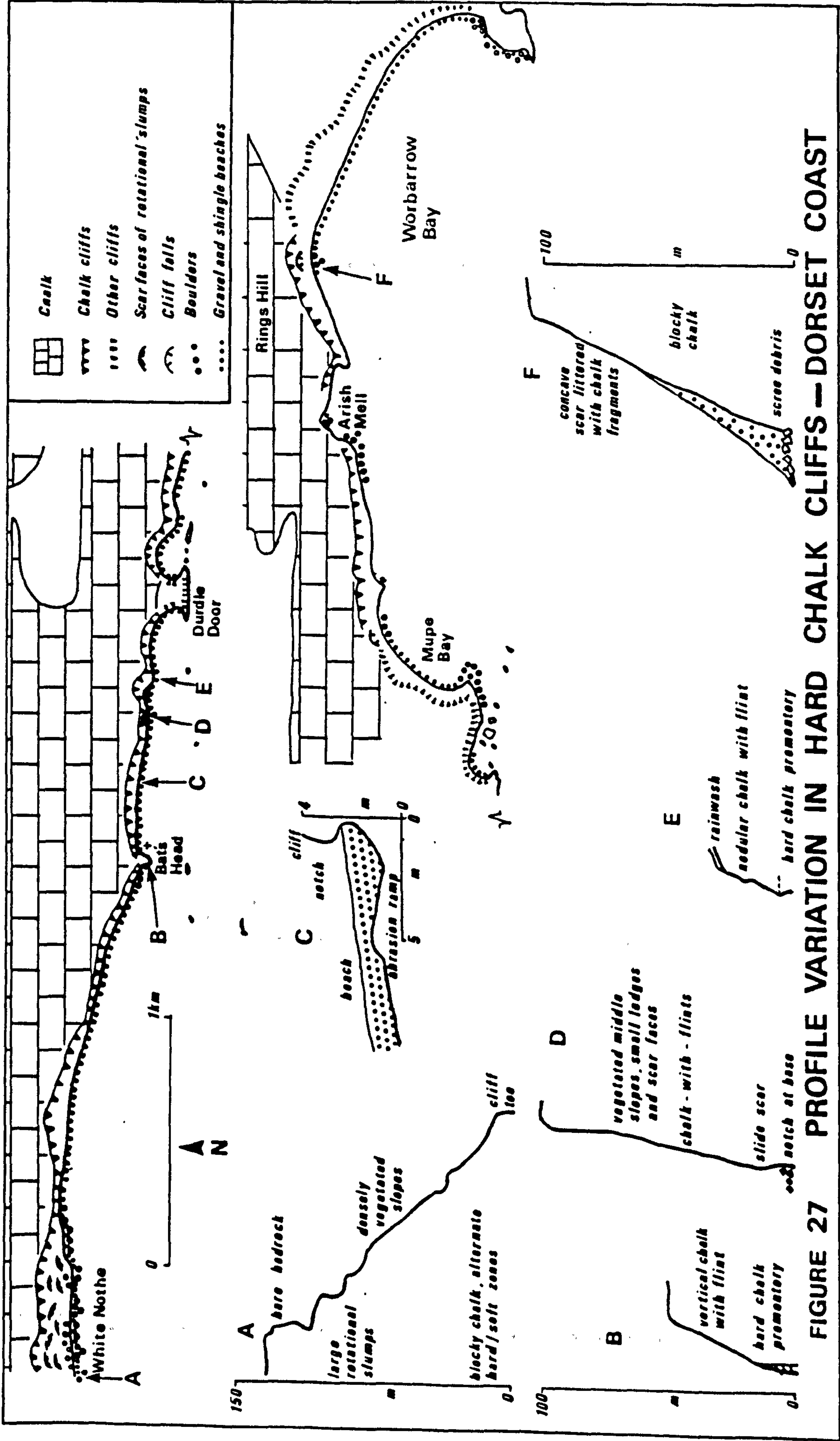


FIGURE 27 PROFILE VARIATION IN HARD CHALK CLIFFS — DORSET COAST



PLATE 17.

CHALK CLIFF EROSION BY FROST ACTION AND/OR DESSICATION.



FIGURE 28 CROSS SECTION THROUGH CLIFF FALL AT SWYRE HEAD, MAY 1983

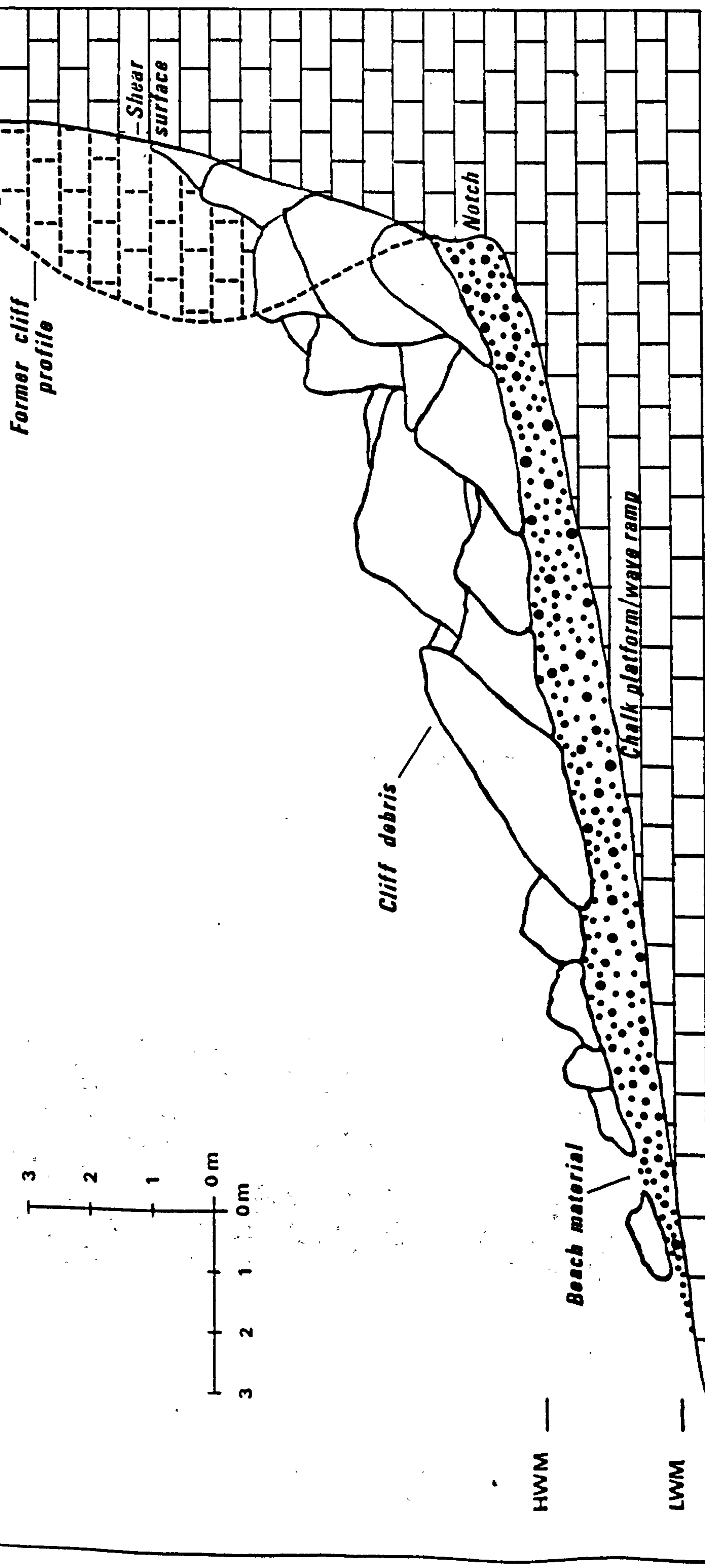




PLATE 18. CHALK CLIFF FALL, SWYRE HEAD, MAY 1983. 15837

PLATE 19. ASPECTS OF CLIFF FALL DEBRIS (MAY-NOV.1983).



PLATE 20. ASPECTS OF CLIFF FALL DEBRIS (MAY-NOV.1983).  
PLATE 21. ASPECTS OF CLIFF FALL DEBRIS (MAY-NOV.1983).



PLATE 22. ASPECTS OF CLIFF FALL DEBRIS (MAY-NOV.1983).

TABLE 6.

SWYRE HEAD DEBRIS SIZE (1983).  
 (MEASUREMENTS OF THE THREE PRIME AXES OF CHALK DEBRIS  
 ALONG THE CENTRE LINE OF THE ROCKFALL).

DATE	3 PRIME AXES			DATE	3 PRIME AXES		
01.06.83	140	68	54	13.09.83	110	59	22
	150	52	32		95	50	20
	102	55	21		49	32	19
	140	56	34		60	39	18
	110	56	33		81	75	31
	429	217	104		19	14	10
	209	87	47		139	80	40
	86	40	16		132	86	35
	50	44	19		119	80	39
	110	90	63		146	85	30
	113	60	20		189	91	43
	159	59	40		52	29	15
	220	136	40		90	39	32
	146	60	39		52	42	24
	103	47	21		235	136	90
	69	40	14		240	90	59
	114	49	29		61	35	20
	442	169	84		85	50	23
	141	110	46		135	75	28
	102	78	39		140	73	44
	530	289	200		274	160	50
	71	47	10		114	48	35
	71	50	45		50	46	29
	72	25	20		80	56	32
	50	42	19		81	56	26
	47	23	19		65	35	29
	55	29	25		105	80	42
	70	35	20		89	35	19
	62	36	33		50	19	14
	93	40	32		166	78	19
	41	32	24	HWM	158	60	44
	156	84	37		126	63	26
	93	40	24		124	62	21
	52	34	22		245	115	82
	62	41	20		106	70	38
	68	49	30		100	50	34
	80	39	21		82	65	36
	98	34	20				
	101	50	40				
	95	35	24				
	60	38	19				
	52	40	20				
	64	39	21				
	56	52	44				
	40	14	12				
	67	34	22				
	182	104	59	LWM			
	290	142	93				
	56	24	20				





PLATE 25. CHALK SCREE SLOPE, COW CORNER, WORBARROW BAY.  
PLATE 24. ROTATIONAL SLUMPS, WHITE NOTHE HEADLAND.



PLATE 25. CHALK INPUT AT CLIFF TOE, WHITE NOTHE.  
PLATE 26. INTERTIDAL BOULDER FIELD, WHITE NOTHE.





PLATE 27. CLIFF PROFILE, BAT'S HEAD.  
PLATE 28. CLIFF PROFILE, SCRATCHY BOTTOM.



PLATE 29. CLIFF PROFILE, SWYRE HEAD.



PLATE 30. CLIFF/PLATFORM JUNCTION; PROFILE 9, DURDLE DOOR BEACH.  
PLATE 31. NOTCH AT CHALK CLIFF FOOT; PROFILE 7, DURDLE DOOR BEACH.

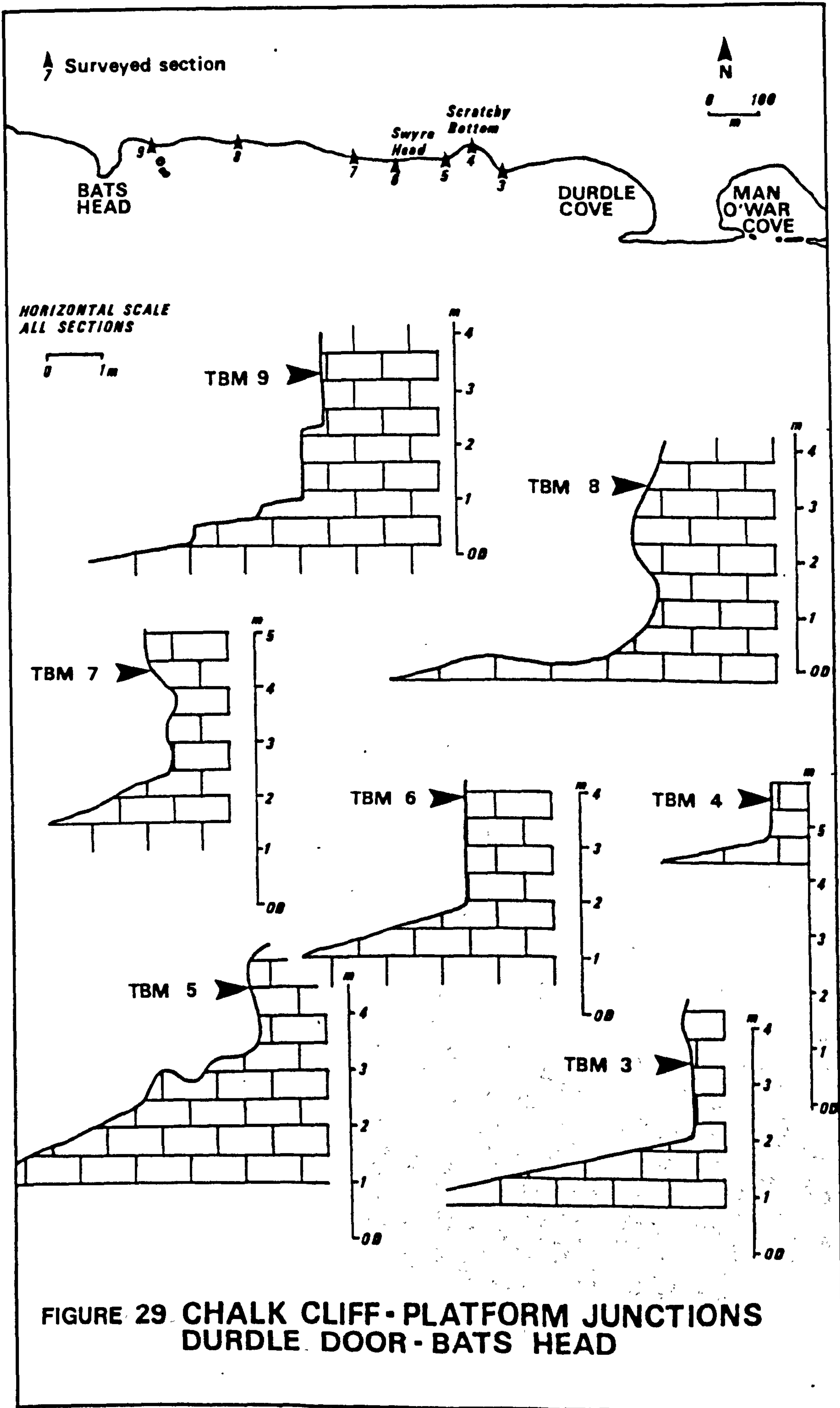


FIGURE 29 CHALK CLIFF-PLATFORM JUNCTIONS  
 DURDLE DOOR-BATS HEAD



PLATE 32. QUARRYING AT CHALK CLIFF FOOT, DURDLE DOOR BEACH.  
PLATE 33. CHALK PLATFORM MORPHOLOGY IN FRONT OF SWYRE HEAD,  
DURDLE DOOR BEACH.



OF GRAIN.  
 $d_p$  = DIAMETER OF  
 SMALLEST  
 CIRCUMSCRIBED  
 CIRCLE AROUND  
 PROJECTION.



PLATE 34. SCOURING AROUND FLINT BANDS IN CHALK PLATFORM, DURDLE  
 DOOR BEACH.  
 PLATE 35. PLATFORM MORPHOLOGY, DURDLE DOOR COVE.

TABLE 7

DEVELOPMENT OF SPHERICITY IDICES

DATE	RESEARCHER	INDEX	BRIEF DESCRIPTION
1919	WENTWORTH	<p>FLATNESS RATIO</p> $\frac{A+B+C}{3}$ <p>A=LENGTH B=BREADTH C=THICKNESS</p>	<p>FLATNESS INDEX REFLECTED ACTUAL SETTLING VELOCITY OF IRREGULAR PARTICLES IN WATER. (INDIRECT) SPHERICITY VALUE)</p>
1935	WADELL	<p>WORKING SPHERICITY</p> $\Psi_w = \frac{\sqrt{4A_p}}{\pi d_p}$ <p>A<sub>p</sub>=PROJECTED AREA OF GRAIN. d<sub>p</sub>=DIAMETER OF SMALLEST CIRCUMSCRIBED CIRCLE AROUND PROJECTION.</p>	<p>DEMONSTRATED THAT SPHERICITY AND ROUNDNESS ARE SEPERATE ASPECTS OF SHAPE. SPHERICITY BEING SENSITIVE TO ROUNDNESS &amp; FORM.</p>
1941	KRUMBEIN	<p>INTERCEPT SPHERICITY</p> $\Psi_i = \sqrt{\frac{L \cdot I \cdot S}{L \cdot L}}$ <p>L=LONGEST AXIS I=INTERMEDIATE AXIS S=SHORTEST AXIS</p>	<p>ADAPTATION OF WADELL'S WORKING SPHERICITY.</p>
1953	RILEY	<p>PROJECTION SPHERICITY</p> $\Psi_r = \frac{d_l}{D_c}$ <p>d<sub>l</sub>=DIAMETER OF LARGEST CIRCUMSCRIBING CIRCLE. D<sub>c</sub>=DIAMETER OF SMALLEST CIRCUMSRIBING CIRCLE.</p>	<p>ONLY TWO DIMENSIONAL DATA.</p>

TABLE 7 continued

DATE	RESEACHER	INDEX	BRIEF DESCRIPTION
1956 & 1958	ASCHENBRENNER SNEED & FOLK	MAXIMUM PROJECTION SPHERICITY $U_p = \frac{(S \cdot S)}{L \cdot I}$ L=LONGEST AXIS I=INTERMEDIATE S=SHORT AXIS	COMPLETE REVISION OF KRUMBEINS SPHR. NEW FORMULA STILL BASED ON 3 AXES LED TO DEVELOPMENT OF FORM TRIANGLE..
1970	DOBKINS & FOLK	OBLATE PROJECTION INDEX $\frac{L-I}{L-S}$ --∞ to+--	TAKES COMPACTNESS INTO ACCOUNT.



TABLE 8

DEVELOPMENT OF ROUNDNESS INDICES.

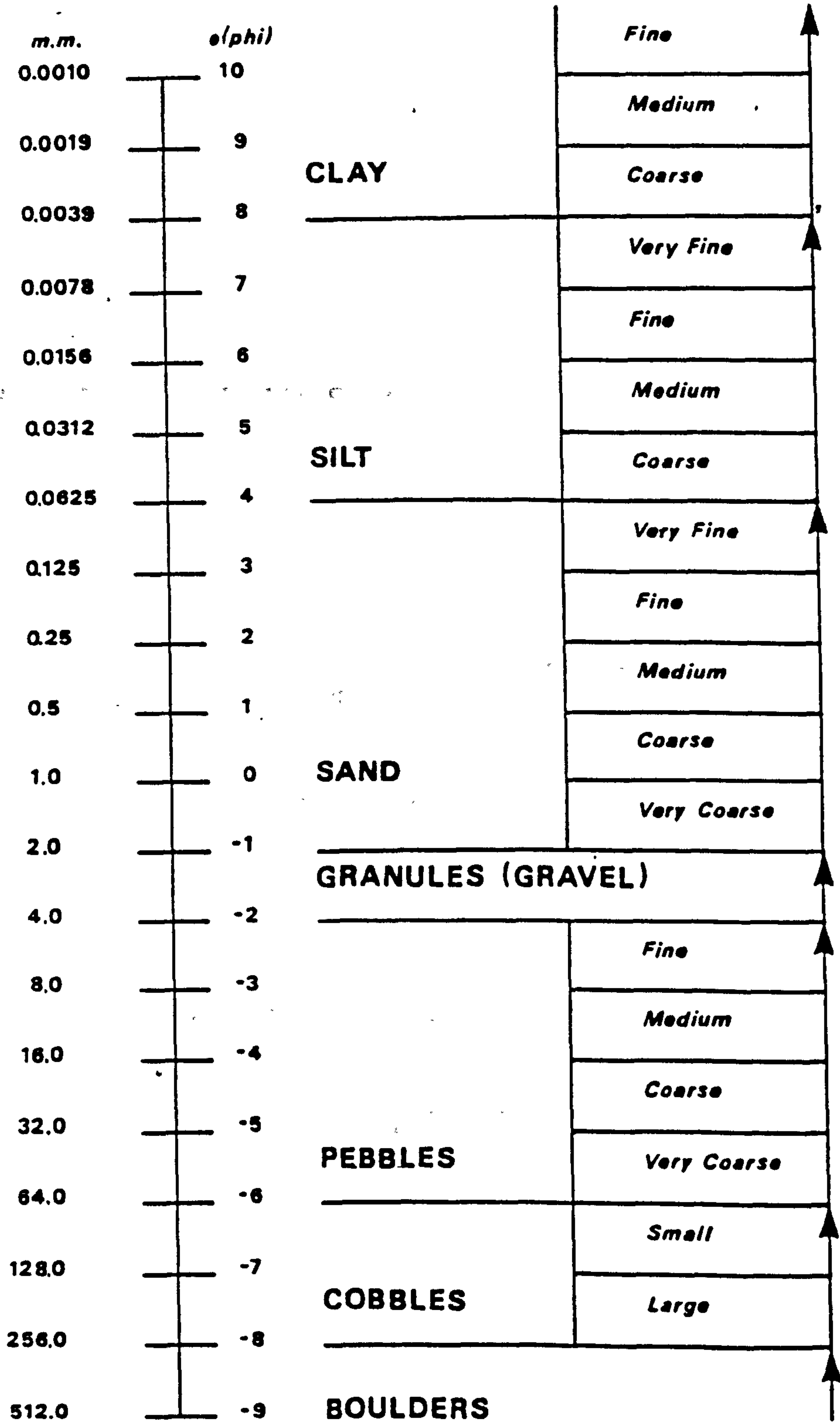
DATE	RESEARCHER	INDEX	BRIEF DESCRIPTION
1932	WADELL	$Pd = \frac{\sum r}{N}$ <p>r=curvature radius of individual corners. N=number of corner radii</p>	<p>A MEASUREMENT IN ONLY ONE PLANE:- "A CORNER DESCRIBED AS EVERY SUCH PART OF AN AREA WHICH HAS A RADIUS OF CURVATURE EQUAL TO OR LESS THAN THE RADIUS OF CURVATURE OF THE MAX.CIRCLE OF THE SAME AREA.</p>
1933	WENTWORTH	$Pr = \frac{r^1}{R}$	<p>r<sup>1</sup>=radius of small corner  <math>R = \frac{D + D_2}{4}</math> =mean grain radius                      D =longest diameter                      D<sub>2</sub>=greatest width</p>
1937	RUSSELL & TAYLOR	COMPARISON PHOTOS	5 CLASSES RANGING FROM ANGULAR TO VERY ROUNDED
1941	WADELL	COMPARISON CHART	VISUAL COMPARISON CHART:-9 SHAPES NO CLASS LIMITS, VALUES 0.1 to 0.9
1947 1952	CAILLEUX	$Fr = \frac{L+1}{2E}$	<p>L=greatest length                      l=greatest width                      E=greatest breadth normal to L and l  <math>F = \frac{a+b}{2c}</math></p>
1953	POWERS	COMPARISON CHART	6 CLASSES; CLASS LIMITS AS WADELL (1932), RANGE FROM 0.12 TO 1.00 ON LOG SCALE, (AV. ROUNDNESS OF SAMPLE >50).

TABLE 9

OTHER SHAPE INDICES.

1935	ZINGG	SHAPE CLASSIFICATION 4 shape categories based on the measurement of the three prime axes- SPHERE, DISC, ROD, BLADE.
1947	CAILLEUX	FLATNESS RATIO: $-F = \frac{a+b}{2c} \cdot 100 = 0 - \infty$  Based on the relationship on the relationship between the 3 prime axes. (inverse of KRUMBEIN'S SPERICITY 1941)
1954	SCHNEIDERHOHN	ELONGATION INDEX: $E = \frac{W}{L}$  Based on the ratio of the greatest width (W) to greatest length(L).
1961	GRIFFITHS	5 FUNDAMENTAL PROPERTIES:- $P = f(m, s, sh, o, p)$ Mathematical analyses of grain shape where m=elements of population s= their size sh= their shape o=orientation p=packing
1965	FOLK	ELONGATION INDEX: $-E = \frac{W_p}{L_p}$  7 classes ranging from very equant to very elongate.
1968	DOBKINS & FOLK	OBLATE-PROLATE INDEX: $-OPI = \frac{(L-I - 0.5)}{\frac{L-S}{S/L}}$  0=BLADE; --=DISC; +=ROD.
1970	EHRlich & WEINBERG	FOURIER ANALYSIS of grain shape by representing it as a linear equation with an indefinite number of terms.





$\phi$ (phi) =  $-\log_2 d$ , where  $d$  is diameter in mm.

FIGURE 30 PARTICLE SIZE CLASSIFICATION

TABLE 11

MEASURES OF CENTRAL TENDENCY  
(FOLK, 1964)

1. MEDIAN      050

TRASK(1930): MEDIAN=050

2. MEAN(in a truly normal distribution the mean and median values are identical).

A NUMBER OF EQUATIONS HAVE BEEN DEVELOPED FOR THE INDICE:

OTTO(1939):  $M\bar{0} = \frac{016+084}{2}$       Statistical Efficiency 74%  
INMAN(1952)

FOLK & WARD(1957):  $Mz = \frac{016+050+084}{3}$       88%

McCAMMON(1962):  $M\bar{0} = \frac{010+030+050+070+090}{5}$

McCAMMON(1962):  $M\bar{0} = \frac{05+015+025\dots+085+090}{10}$       97%

TABLE 11 continued

INDICES OF DISPERSION(scatter):

1. SORTING: Statistical Efficiency

OTTO(1939):  $\frac{(\emptyset 84 - \emptyset 16)}{2}$  54%  
 INMAN(1952):  $\frac{(\emptyset 84 - \emptyset 16)}{2}$

FOLK AND WARD(1957):  $\frac{(\emptyset 84 - \emptyset 16)}{4} + \frac{(\emptyset 95 - \emptyset 5)}{6.6}$  79%

McCAMMON(1962):  $\frac{(\emptyset 85 + \emptyset 95 - \emptyset 5 - \emptyset 15)}{6.6}$  79%

McCAMMON(1962):  $\frac{(\emptyset 70 + \emptyset 80 + \emptyset 90 + \emptyset 97 - \emptyset 3 - \emptyset 10 - \emptyset 20 - \emptyset 30)}{9.1}$  87%

2. SKEWNESS:

TRASK(1932):  $\frac{(\text{mm}25)(\text{mm}75)}{(\text{mm}50)^2}$

INMAN(1952):  $\frac{\emptyset 16 + \emptyset 84 - 2\emptyset 50}{\emptyset 84 - \emptyset 16}$

INMAN(1952):  $\frac{\emptyset 5 + \emptyset 95 - 2\emptyset 50}{\emptyset 84 - \emptyset 16}$

FOLK & WARD(1957):  $\frac{\emptyset 84 - \emptyset 16 + 2\emptyset 50}{2(\emptyset 84 - \emptyset 16)} + \frac{\emptyset 95 - \emptyset 5 - 2\emptyset 50}{2(\emptyset 95 - \emptyset 5)}$

3. KURTOSIS:

INMAN(1952):  $\emptyset = \frac{(\emptyset 95 - \emptyset 5) - (\emptyset 84 - \emptyset 16)}{\emptyset 84 - \emptyset 16}$

FOLK & WARD(1957):  $Kg = \frac{\emptyset 95 - \emptyset 5}{2.44(\emptyset 75 - \emptyset 25)}$

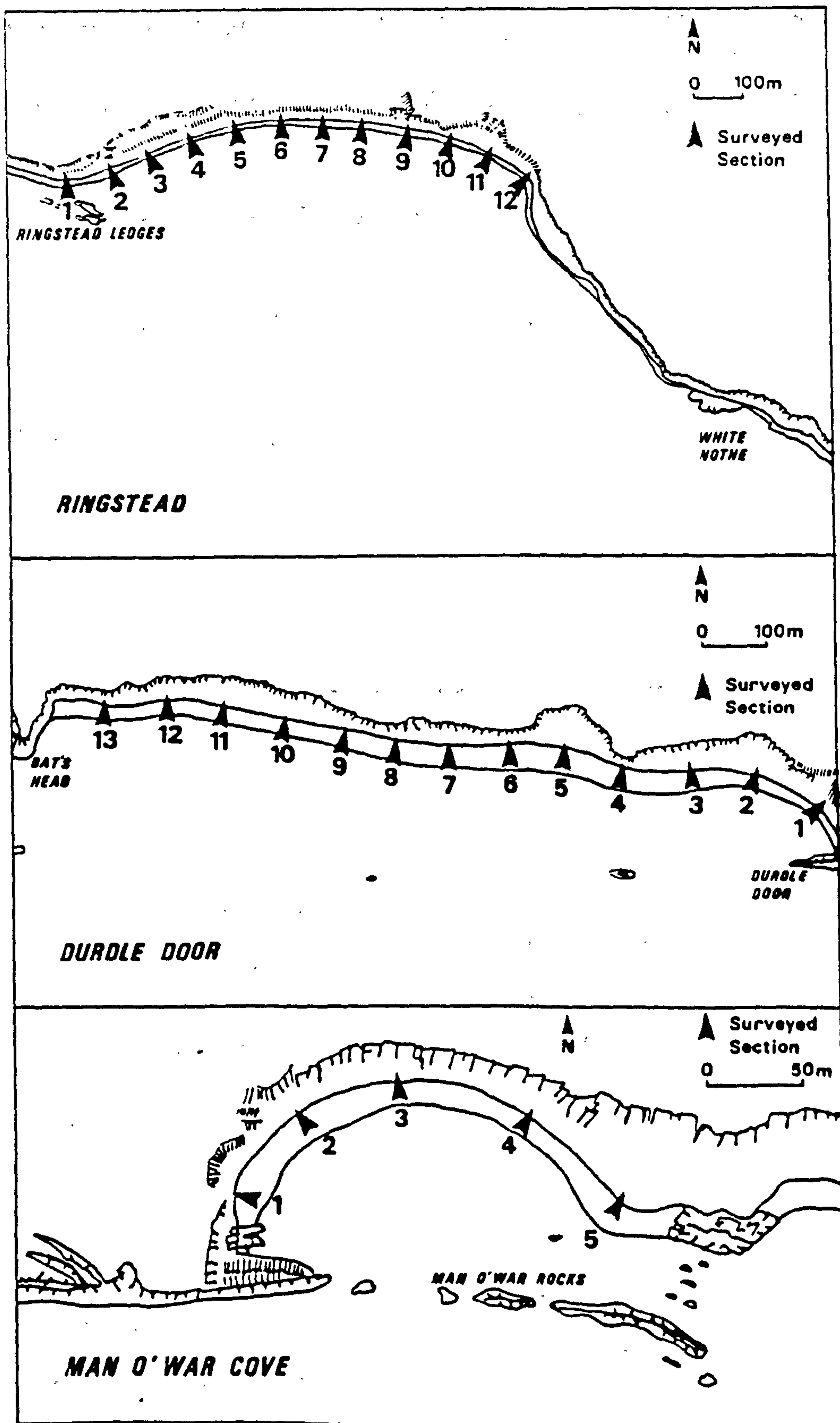


FIGURE 31 PILOT STUDY BEACH SECTIONS

TABLE 12

GRAPHICAL MEASURES FOR MEAN, SKEWNESS, SORTING AND KURTOSIS  
(BRIGGS, 1977).

MEAN  $\frac{\phi_{90} + \phi_{80} + \phi_{70} + \phi_{60} + \phi_{50} + \phi_{40} + \phi_{30} + \phi_{20} + \phi_{10}}{9}$

SKEWNESS  $\frac{\phi_{84} - \phi_{50}}{\phi_{84} - \phi_{16}} - \frac{\phi_{50} - \phi_5}{\phi_{95} - \phi_5}$

SORTING  $\frac{\phi_{90} + \phi_{80} + \phi_{70} - \phi_{30} - \phi_{20} - \phi_{10}}{5.3}$

KURTOSIS  $\frac{\phi_{95} - \phi_5}{2.44(\phi_{75} - \phi_{25})}$

DESCRIPTIVE TERMS FOR SORTING, KURTOSIS AND SKEWNESS  
(phi units)

SORTING

Very well sorted	<0.35
Well sorted	0.35 - 0.50
Moderately well sorted	0.50 - 0.70
Poorly sorted	1.00 - 2.00
Very poorly sorted	2.00 - 4.00
Extremely poorly sorted	>4.00

KURTOSIS

Very platykurtic	<0.67
Platykurtic	0.67 - 0.90
Mesokurtic	0.90 - 1.11
Leptokurtic	1.11 - 1.5
Very leptokurtic	1.50 - 3.00
Extremely leptokurtic	>3.00

SKEWNESS

Very negatively skewed	-1.0 - -0.3
Negatively skewed	-0.3 - -0.1
Symmetrical	-0.1 - 0.1
Positively skewed	0.1 - 0.3
Very positively skewed	0.3 - 1.0



TABLE 13a

## RINGSTEAD PARTICLE SIZE ANALYSIS 23 SEPTEMBER 1982

PROFILE & LOCATION	GRAPHIC	(Phi units) SKEWNESS	SORTING	KURTOSIS
1A	-3.6	0.05	0.49	1.08
1B	-3.62	0.17	0.53	0.83
2A	-3.80	0.23	0.55	0.80
2B	-3.12	0.03	0.50	0.95
3A	-4.58	0.24	0.37	1.03
3B	-3.03	0.01	0.54	0.95
4A	-2.62	0.03	0.36	1.11
4B	-2.82	0.18	0.57	0.73
5A	-2.90	0.31	0.54	0.76
5B	-4.12	-0.31	0.28	0.88
6A	-2.82	0.44	0.44	0.80
6B	-4.06	0.30	0.40	1.00
7A	-3.46	-0.06	0.58	1.08
7B	-2.86	-0.08	0.43	1.96
8A	-3.59	0.05	0.46	0.90
8B	-3.09	0.10	0.62	1.12
9A	-3.40	0.26	0.43	1.13
9B	-3.05	-0.19	0.67	0.86
10A	-2.90	0.50	0.66	1.22
10B	-3.66	0.08	0.50	0.96
11A	-3.63	0.03	0.42	0.99
11B	-3.62	0.06	0.47	1.02
12A	-3.76	0.18	0.37	0.86
12B	-4.41	0.11	0.27	1.00

TABLE 13b

RINGSTEAD PARTICLE SHAPE ANALYSIS 23 SEPTEMBER 1982.

PROFILE LOCATION	MEAN ELONG.	MEAN FLAT.	MEAN SPHER.	SNEED & FOLK	ZINGG
1A	1.5	1.99	0.66	VP 10	B 10
				VB 27	D 26
				VE 13	R 6
1B	1.45	2.24	0.62	VP 11	S 8
				VB 23	B 8
				VE 16	D 24
2A	1.75	2.25	0.63	VP 7	R 12
				VB 23	S 6
				VP 20	B 18
2B	1.71	2.55	0.63	VP 8	D 20
				VB 23	R 10
				VE 19	S 2
3A	1.60	2.24	0.63	VP 8	B 19
				VB 22	D 17
				VE 20	R 11
3B	1.57	2.48	0.59	VP 9	S 3
				VB 27	B 14
				VE 14	D 13
4A	1.64	2.71	0.56	VP 9	R 16
				VB 21	S 7
				VE 20	B 18
4B	1.48	2.65	0.57	VP 15	D 16
				VB 23	R 9
				VE 12	S 4
5A	1.49	2.56	0.58	VP 8	B 13
				VB 32	D 24
				VE 10	R 9
6A	1.69	2.52	0.58	VP 2	S 4
				VB 25	B 14
				VE 23	D 27
6B	1.45	1.99	0.66	VP 10	R 6
				VB 28	S 3
				VE 12	B 16
					D 16
					R 17
					S 1
					B 14
					D 19
					R 8
					S 1

TABLE 13b continued.

PROFILE LOCATION	MEAN ELONG.	MEAN FLAT.	MEAN SPHER.	SNEED & FOLK	ZINGG
7A	1.80	2.48	0.59	VP 12	B 11
				VB 21	D 26
				VE 17	R 12
7B	1.61	2.18	0.63	VP 4	S 1
				VB 25	B 12
				VE 21	D 14
8A	1.50	2.58	0.56	VP 14	R 18
				VB 26	S 6
				VE 10	B 20
8B	1.57	2.29	0.61	VP 10	D 24
				VB 20	R 5
				VE 20	S 1
9A	1.48	2.45	0.59	VP 10	B 12
				VB 29	D 20
				VE 11	R 17
9B	1.42	2.28	0.61	VP 14	S 1
				VB 22	B 17
				VE 14	D 24
10A	1.54	2.62	0.56	VP 13	R 5
				VB 21	S 4
				VE 16	B 8
10B	1.46	2.03	0.66	VP 6	D 29
				VB 28	R 10
				VE 16	S 3
11A	1.53	2.19	0.63	VP 8	B 23
				VB 24	D 20
				VE 18	R 5
12A	1.48	2.58	0.56	VP 11	S 2
				VB 29	B 9
				VE 10	D 21
12B	1.46	1.81	0.70	VP 3	R 11
				VB 29	S 9
				VE 18	B 13
					D 18
					R 15
					S 4
					B 16
					D 26
					R 6
					S 2
					B 8
					D 14
					R 13
					S 15

TABLE 14a

## DURDLE DOOR PARTICLE SIZE ANALYSIS 23 SEPTEMBER 1982

PROFILE & LOCATION	GRAPHIC MEAN	(Phi units)		KURTOSIS
		SKEWNESS	SORTING	
1A	-2.05	0.03	0.57	0.99
1B	-2.78	-0.04	0.29	0.99
2A	-1.74	0.06	0.28	1.02
2B	-2.18	0.18	0.39	0.95
3A	-1.36	0.13	0.58	0.39
3B	-1.02	0.09	0.35	0.95
4A	-0.12	0.41	0.55	0.93
4B	-0.19	-0.25	0.29	1.01
5A	-1.04	-0.08	1.29	0.72
5B	0.70	0.36	1.07	0.66
6A	-1.81	0.03	0.31	0.98
6B	0.55	0.14	0.69	0.82
7A	-0.63	0.05	0.39	0.99
7B	-0.50	0.34	0.87	0.86
8A	0.78	0.11	0.54	1.03
8B	0.31	-0.10	0.36	1.01
9A	1.10	0.30	0.91	1.07
9B	0.35	-0.05	0.89	0.73
10A	0.73	-0.04	0.39	1.03
10B	0.04	0.35	0.48	1.20
11A	0.34	0.29	0.86	0.43
11B	-0.12	0.18	0.40	0.89
12A	-1.28	-0.22	0.72	1.15
12B	-0.16	0.17	0.44	0.95
13A	-1.68	-0.23	1.02	0.79
13B	0.37	0.12	0.35	1.19

TABLE 14b

DURDLE DOOR PARTICLE SHAPE ANALYSIS 23 SEPTEMBER 1982

PROFILE & LOCATION	MEAN ELONG.	MEAN FLAT.	MEAN SPHER.	SNEED & FOLK	ZINGG
1A	1.55	2.69	0.55	VP 9	B 26
				VB 30	D 22
				VE 11	R 0
2A	1.55	2.44	0.60	VP 10	S 2
				VB 19	B 13
				VE 21	D 21
2B	1.54	2.46	0.58	VP 10	R 11
				VB 27	S 5
				VE 13	B 20
3A	1.48	2.53	0.59	VP 11	D 23
				VB 27	R 5
				VE 12	S 2
3B	1.55	2.77	0.55	VP 8	B 13
				VB 32	D 27
				VE 10	R 6
4A	1.54	2.56	0.56	VP 7	S 4
				VB 31	B 21
				VE 12	D 25
5A	1.54	2.23	0.61	VP 1	R 3
				VB 33	S 1
				VE 16	B 24
5B	1.43	2.06	0.65	VP 11	D 19
				VB 23	R 5
				VE 16	S 2
6A	1.66	2.83	0.53	VP 6	B 28
				VB 29	D 10
				VE 15	R 8
6B	1.50	2.13	0.63	VP 5	S 4
				VB 28	B 8
				VE 17	D 26
					R 9
					S 7
					B 29
					D 15
					R 5
					S 1
					B 13
					D 22
					R 12
					S 3

TABLE 14b continued.

PROFILE LOCATION	MEAN ELONG.	MEAN FLAT.	MEAN SPHER.	SNEED & FOLK	ZINGG
7A	1.58	2.38	0.59	VP 0	B 32
				VB 33	D 13
				VE 17	R 4
7B	2.02	2.29	0.63	VP 1	S 1
				VB 17	B 14
				VE 32	D 7
					R 24
11B	1.48	2.26	0.61	VP 3	S 5
				VB 32	B 27
				VE 15	D 14
					R 1
12A	1.61	2.25	0.61	VP 4	S 8
				VB 28	B 19
				VE 18	D 15
					R 12
13A	1.62	1.95	0.67	VP 3	S 4
				VB 20	B 11
				VE 27	D 13
					R 22
					S 4

TABLE 15a

MAN O'WAR PARTICLE SIZE ANALYSIS 23 SEPTEMBER 1982.

PROFILE & LOCATION	GRAPHIC MEAN	(Phi units)		KURTOSIS
		SKEWNESS	SORTING	
1A	-2.27	0.06	0.33	1.09
1B	-2.05	0.06	0.29	1.08
2A	-3.30	0.03	0.31	1.04
2B	-3.31	0.08	0.55	1.11
3A	-3.23	0.05	0.42	1.06
3B	-3.30	0.05	0.43	1.07
4A	-2.74	0.08	0.44	1.11
4B	-3.66	0.04	0.43	1.05
5A	-4.30	0.05	0.56	1.07
5B	-3.26	0.06	0.46	1.09

TABLE 15b

PROFILE LOCATION	MEAN ELONG.	MEAN FLAT.	MEAN SPHER.	SNEED & FOLK	ZINGG
1A	1.57	2.55	0.58	VP 5	B 14
				VB 26	D 22
				VP 19	R 12
1B	1.55	2.14	0.63	VP 1	S 2
				VB 31	B 15
				VE 18	D 19
2A	1.48	2.70	0.55	VP 10	R 11
				VB 33	S 5
				VE 7	B 20
3B	1.49	2.10	0.65	VP 12	D 24
				VB 20	R 4
				VE 18	S 2
4A	1.63	2.60	0.58	VP 7	B 10
				VB 24	D 20
				VE 19	R 12
4B	1.55	2.20	0.64	VP 5	S 8
				VB 23	B 19
				VE 22	D 18
5A	1.39	2.21	0.65	VP 9	R 10
				VB 28	S 3
				VE 13	B 13
5B	1.63	2.34	0.60	VP 8	D 16
				VB 23	R 12
				VE 19	S 9
					B 6
					D 24
					R 9
					S 11
					B 18
					D 16
					R 13
					S 3



TABLE 16a

PROFILE & LOCATION	GRAPHIC MEAN	RINGSTEAD PARTICLE SIZE ANALYSIS 14 OCTOBER 1982.		
		(Phi units) SKEWNESS	SORTING	KURTOSIS
1A	-2.79	-0.29	0.48	1.49
1B	-2.57	-0.17	0.55	1.08
2A	-3.56	0.18	0.66	0.82
2B	-2.59	0.10	0.37	0.95
3A	-3.61	-0.09	0.37	1.09
3B	-2.21	0.23	1.91	0.80
4A	-3.96	0.21	0.32	0.90
4B	-3.39	0.01	0.61	0.83
5A	-3.64	0.17	0.51	0.86
5B	-3.04	0.01	0.74	0.89
6A	-2.75	0.03	0.74	1.13
6B	-0.73	-0.08	2.07	0.64
7A	-0.06	0.04	0.65	1.11
7B	-2.02	-0.25	0.73	0.89
8A	-1.37	0.13	0.46	0.87
8B	-2.03	0.68	1.66	0.96
9A	0.44	0.03	0.58	0.96
9B	-0.15	-0.30	2.13	0.68
10A	-2.07	0.24	0.35	1.03
10B	-0.01	-0.50	1.92	1.15
11A	-1.61	-0.04	0.31	1.06
11B	-2.06	-0.39	0.45	1.01
12A	-2.16	0.04	0.38	1.03
12B	-2.08	-0.26	0.54	0.99

TABLE 16b

RINGSTEAD PARTICLE SHAPE ANALYSIS 14 OCTOBER 1982.

PROFILE & LOCATION	MEAN ELONG.	MEAN FLAT.	MEAN SPHER.	SNEED & FOLK	ZINGG
1A	1.56	2.34	0.59	VP 5	B 18
				VB 32	D 20
				VE 13	R 9
1B	1.50	1.98	0.66	VP 5	S 3
				VB 27	B 14
				VE 18	D 17
2A	1.57	2.07	0.64	VP 5	R 12
				VB 26	S 7
				VE 19	B 13
2B	2.26	2.26	0.62	VP 6	D 18
				VB 9	R 16
				VE 25	S 3
3A	1.49	2.09	0.63	VP 11	B 15
				VB 24	D 24
				VE 15	R 10
3B	1.53	2.22	0.63	VP 9	S 7
				VB 24	B 15
				VE 17	D 19
4A	1.63	2.30	0.60	VP 3	R 14
				VB 30	S 2
				VE 17	B 16
5A	1.53	2.26	0.61	VP 9	D 21
				VB 27	R 10
				VE 14	S 3
5B	1.52	2.44	0.58	VP 11	B 14
				VB 28	D 20
				VE 11	R 11
					S 5
					B 17
					D 22
					R 10
					S 1

TABLE 16b continued.

PROFILE LOCATION	MEAN ELONG.	MEAN FLAT.	MEAN SPHER.	SNEED & FOLK	ZINGG
6A	1.58	2.38	0.62	VP 4	B 18
				VB 23	D 12
				VE 23	R 15
6B	1.66	2.19	0.63	VP 6	S 5
				VB 15	B 15
				VE 29	D 13
8A	1.47	2.15	0.63	VP 7	R 22
				VB 23	S 0
				VE 20	B 14
10A	1.66	2.56	0.58	VP 6	D 19
				VB 23	R 13
				VE 21	S 4
11A	1.62	2.30	0.60	VP 3	B 21
				VB 29	D 15
				VE 18	R 12
12A	1.60	2.84	0.54	VP 8	S 2
				VB 27	B 19
				VE 15	D 23
12B	1.61	2.39	0.59	VP 6	R 8
				VB 24	S 0
				VE 20	B 18
					D 19
					R 13
					S 0

TABLE 17a

DURDLE DOOR PARTICLE SIZE ANALYSIS 14 OCTOBER 1982.

PROFILE & LOCATION	(Phi units)			
	GRAPHIC MEAN	SKEWNESS	SORTING	KURTOSIS
1A	-2.33	0.09	0.38	0.94
1B	-1.99	0.83	0.42	0.94
2A	-2.06	-0.03	0.26	0.88
2B	-1.49	-0.17	0.35	1.43
3A	-1.61	0.01	0.26	0.97
3B	-0.69	0.14	0.21	1.04
4A	-0.27	-0.12	0.34	1.02
4B	0.62	-0.01	0.36	0.99
5A	-0.27	-0.08	0.34	1.09
5B	-0.18	-0.18	0.25	1.32
6A0	-0.70	0.03	0.40	1.08
6B	-0.16	-0.10	0.55	1.02
7A	-0.90	0.01	0.41	1.06
7B	-0.66	0.03	0.48	1.14
8A	-0.42	-0.06	0.37	1.23
8B	-0.50	-1.58	0.39	1.72
9A	-1.19	-0.09	0.22	1.16
9B	-1.21	0.05	0.40	0.95
10A	-1.21	0.04	0.40	0.94
10B	-0.79	0.60	0.61	1.10
11A	-1.00	0.24	0.41	1.00
11B	-1.08	0.25	0.41	0.98
12A	-0.77	0.17	0.26	1.58
12B	-0.66	0.03	0.50	1.10
13A	-1.37	-0.14	0.69	0.96
13B	-0.06	-0.22	0.29	1.07

TABLE 17b

DURDLE DOOR PARTICLE SHAPE ANALYSIS 14 OCTOBER 1982.

PROFILE & LOCATION	MEAN ELONG.	MEAN FLAT.	MEAN SPHER.	SNEED & FOLK	ZINGG
1A	1.59	2.18	0.62	VP 8	B 21
				VB 21	D 16
				VE 21	R 11
1B	1.56	2.25	0.62	VP 8	S 2
				VB 26	B 12
				VE 16	D 20
2A	1.62	2.25	0.61	VP 9	R 12
				VB 19	S 6
				VE 22	B 12
2B	1.48	2.23	0.62	VP 7	D 19
				VB 25	R 17
				VE 18	S 2
3A	1.58	2.19	0.62	VP 5	B 13
				VB 26	D 22
				VE 19	R 11
3B	1.49	2.23	0.61	VP 5	S 4
				VB 31	B 16
				VE 14	D 18
4A	1.39	2.09	0.64	VP 7	R 15
				VB 32	S 1
				VE 11	B 9
4B	1.43	2.10	0.63	VP 5	D 27
				VB 36	R 12
				VE 9	S 2
5A	1.36	2.10	0.65	VP 5	B 11
				VB 38	D 29
				VE 7	R 4
6A	1.56	2.37	0.57	VP 6	S 6
				VB 30	B 8
				VE 14	D 36
6B	1.49	2.22	0.62	VP 5	R 5
				VB 32	B 5
				VE 13	D 38
7A	1.51	2.27	0.60	VP 11	R 4
				VB 23	S 3
				VE 16	B 18
					D 22
					R 9
					S 0

TABLE 17b continued.

PROFILE & LOCATION	MEAN ELONG.	MEAN FLAT.	MEAN SPHER.	SNEED & FOLK	ZINGG
7B	1.51	2.22	0.62	VP 9	B 8
				VB 25	D 26
				VE 16	R 13
8A	1.43	2.03	0.65	VP 11	S 3
				VB 18	B 8
				VE 21	D 25
8B	1.47	2.21	0.61	VP 11	R 12
				VB 27	S 5
				VE 12	B 12
9A	1.58	2.26	0.61	VP 11	D 29
				VB 18	R 8
				VE 21	S 1
9B	1.53	2.13	0.63	VP 6	B 9
				VB 27	D 23
				VE 17	R 17
10A	1.52	2.31	0.60	VP 9	S 1
				VB 24	B 7
				VE 17	D 28
10B	1.52	2.27	0.61	VP 10	R 14
				VB 23	S 1
				VE 17	B 13
11A	1.62	2.22	0.62	VP 5	D 23
				VB 23	R 17
				VE 22	S 0
11B	1.63	2.34	0.60	VP 5	B 18
				VB 24	D 16
				VE 21	R 13
12A	1.52	2.23	0.61	VP 5	S 3
				VB 30	B 17
				VE 15	D 20
12B	1.44	2.30	0.60	VP 6	R 11
				VB 31	S 2
				VE 13	B 11
13A	1.62	2.16	0.62	VP 3	D 28
				VB 27	R 5
				VE 20	S 6
					B 24
					D 12
					R 13
					S 1

TABLE 18a

MAN O'WAR PARTICLE SIZE ANALYSIS 14 OCTOBER 1982.  
 (Phi units)

PROFILE & LOCATION	GRAPHIC MEAN	SKEWNESS	SORTING	KURTOSIS
1A	-2.61	0.05	0.39	1.09
1B	-2.59	0.05	0.53	1.17
2A	-3.47	0.06	0.29	1.03
2B	-2.59	0.04	0.53	1.17
3A	-3.97	0.06	0.36	1.03
3B	-4.10	0.08	0.45	1.05
4A	-2.59	0.04	0.34	1.07
4B	-2.90	0.04	0.39	1.07
5A	-4.29	0.06	0.50	1.05
5B	-3.50	0.05	0.56	1.10

TABLE 18b

## MAN O'WAR PARTICLE SHAPE ANALYSIS 14 OCTOBER 1982.

PROFILE & LOCATION	MEAN ELONG.	MEAN FLAT.	MEAN SPHER.	SNEED & FOLK	ZINGG
1A	1.63	2.27	0.61	VP 4	B 21
				VB 21	D 12
				VE 25	R 14
1B	1.55	1.99	0.67	VP 7	S 3
				VB 22	B 12
				VE 21	D 13
2A	1.43	3.06	0.57	VP 14	R 14
				VB 28	S 11
				VE	B 11
2B	1.52	2.21	0.62	VP 11	D 31
				VB 24	R 6
				VE 15	S 2
3A	1.44	2.23	0.62	VP 14	B 8
				VB 23	D 25
				VE 13	R 5
3B	1.41	2.06	0.66	VP 10	S 5
				VB 28	B 7
				VE 12	D 21
4A	1.62	2.92	0.53	VP 8	R 9
				VB 29	S 13
				VE 13	B 25
4B	1.53	3.15	0.50	VP 13	D 19
				VB 29	R 5
				VE 8	S 1
5A	1.49	2.09	0.66	VP 6	B 21
				VB 27	D 27
				VE 17	R 1
5B	1.44	2.16	0.66	VP 5	S 1
				VB 27	B 9
				VE 18	D 16
					R 12
					S 13
					B 6
					D 15
					R 12
					S 17



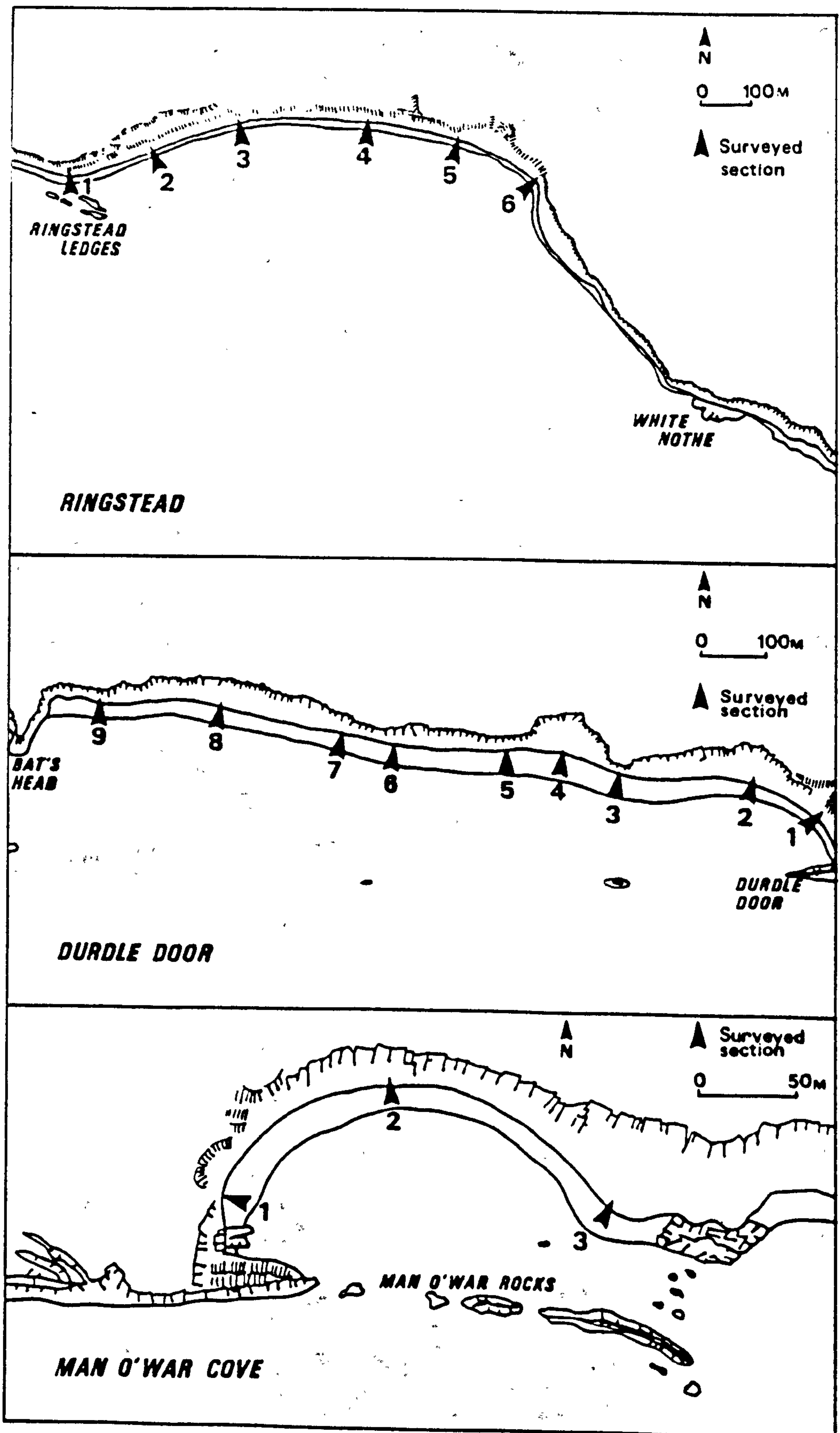
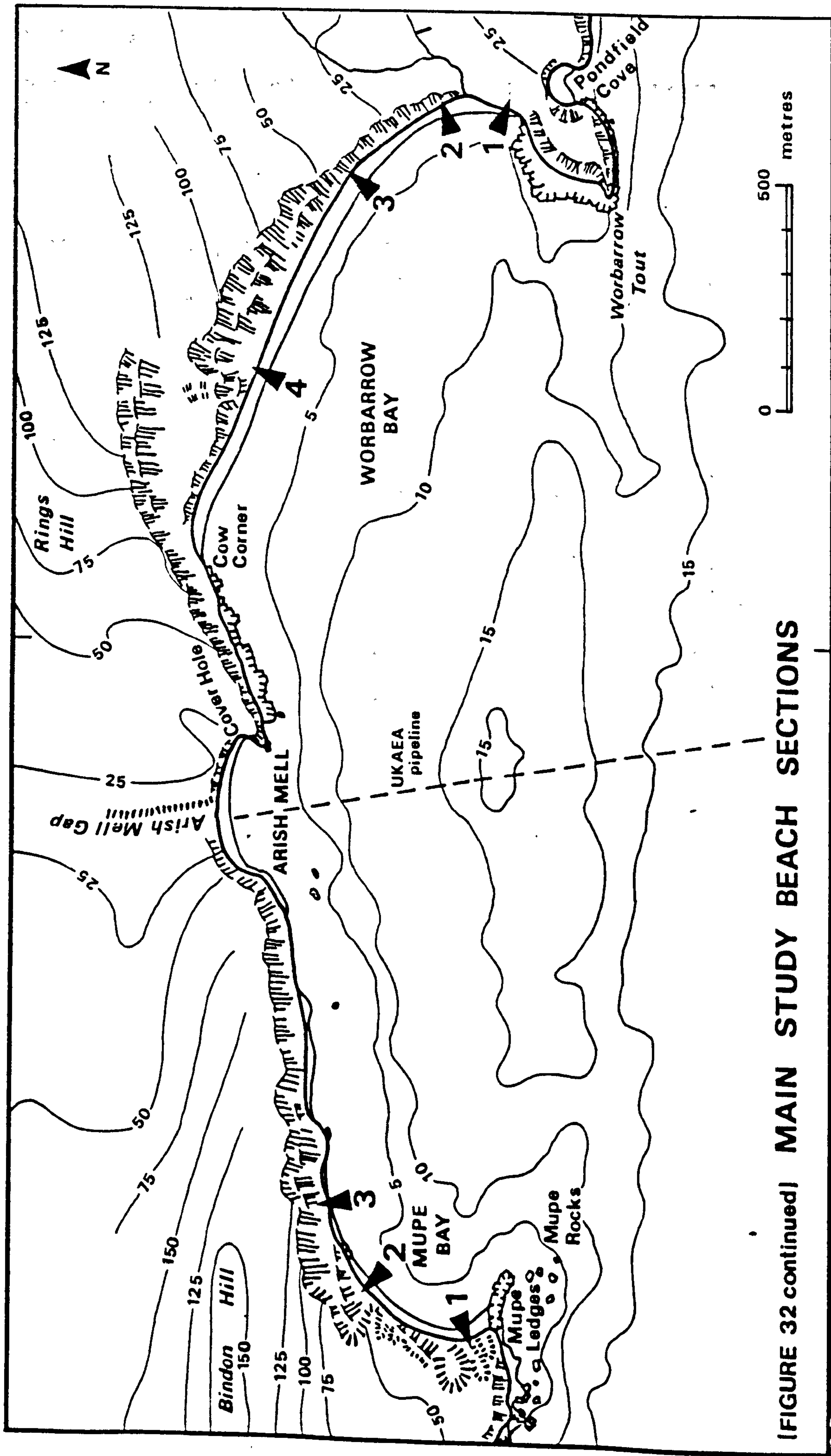


FIGURE 32 MAIN STUDY BEACH SECTIONS



(FIGURE 32 continued) MAIN STUDY BEACH SECTIONS

TABLE 19a

DURDLE DOOR ONE MONTH SURVEY; PARTICLE SIZE ANALYSIS  
25 JANUARY 1983.

PROFILE LOCATION	GRAPHIC MEAN	(Phi units)		KURTOSIS
		SKEWNESS	SORTING	
1BS	-2.85	-0.24	0.47	1.24
HW	-2.70	0.02	0.19	1.13
MW	-3.80	0.13	0.29	0.91
LW	-3.87	0.19	0.22	0.83
2BS	-2.73	0.13	0.31	0.99
HW	-3.56	0.19	0.57	0.78
MW	-1.74	-0.15	0.29	1.13
LW	-1.46	-0.16	0.23	1.06
3BS	0.72	-0.15	0.26	1.12
HW	-3.70	0.38	0.48	0.79
MW	0.49	-0.04	0.23	0.94
LW	-0.54	-0.18	0.27	1.07
4BS	-1.30	0.16	0.76	1.12
HW	-3.34	0.19	1.08	0.92
MW	-0.40	-0.10	0.24	1.04
LW	-0.17	0.19	0.18	1.09
5BS	-0.35	-0.05	0.41	1.04
HW	-0.53	-0.33	0.66	2.35
MW	0.19	0.05	0.44	0.92
LW	-0.32	-0.06	0.33	0.19

TABLE 19b

DURDLE DOOR ONE MONTH SURVEY; PARTICLE SIZE ANALYSIS  
30 JANUARY 1983.

PROFILE & LOCATION	GRAPHIC MEAN	(Phi units)		KURTOSIS
		SKEWNESS	SORTING	
1HW	-2.91	-0.11	0.19	1.29
MW	-2.93	-0.02	0.16	0.93
LW	-2.95	-0.14	0.11	1.02
2HW	-2.44	-0.40	0.44	1.11
MW	-1.29	-0.03	0.86	0.40
LW	-1.26	-0.06	0.45	0.71
3HW	-0.25	-0.07	0.29	1.05
MW	-0.22	-0.10	0.29	1.16
LW	-0.13	-0.15	0.45	1.13
4HW	0.12	-0.09	0.63	1.06
MW	-1.14	-0.70	0.99	0.74
LW	-1.20	-0.13	1.68	0.73
5HW	-0.62	0.12	0.45	0.63
MW	-0.68	-0.09	0.46	1.14
LW	-1.27	0.12	1.44	0.88
6HW	EXPOSED	PLATFORM		
MW	EXPOSED	PLATFORM		
LW	EXPOSED	PLATFORM		
7HW	-0.88	-0.06	0.38	1.17
MW	-1.05	-0.62	0.57	2.08
LW	-1.02	-0.66	0.54	1.61
8HW	0.32	-0.31	0.45	1.23
MW	EXPOSED	PLATFORM		
LW	-0.05	0.56	1.01	1.34
9HW	EXPOSED	PLATFORM		
MW	EXPOSED	PLATFORM		
LW	EXPOSED	PLATFORM		

TABLE 19c

DURDLE DOOR ONE MONTH SURVEY; PARTICLE SIZE ANALYSIS  
8 FEBRUARY 1983.

PROFILE LOCATION	GRAPHIC MEAN	(Phi units)		KURTOSIS
		SKEWNESS	SORTING	
1BS	-3.12	-0.05	0.34	1.25
HW	-3.24	-.019	0.26	0.89
MW	-3.32	-0.01	0.22	0.99
LW	-3.48	-0.19	0.29	1.00
2BS	-2.02	0.21	0.30	0.64
HW	-3.40	-0.19	0.35	1.10
MW	-3.79	0.03	0.27	0.77
LW	-3.87	0.31	0.33	0.86
3BS	-0.64	0.10	0.81	1.07
HW	-3.33	0.01	0.59	0.81
MW	-3.33	-0.07	0.60	1.09
LW	-3.41	-0.23	0.45	0.95
4HW	-3.85	0.42	0.38	1.29
LW	-3.51	-0.02	0.38	1.29
5BS	-0.56	0.28	0.62	0.92
HW	-3.89	0.22	0.36	0.99
MW	-0.16	0.20	0.97	1.00
LW	-2.94	0.49	0.47	0.88
6BS	-0.78	0.09	0.40	1.25
HW	0.38	-0.08	0.42	1.14
MW	-2.61	-0.15	0.47	1.07
LW	0.41	-0.38	0.53	0.97
7HW	0.40	0.80	0.48	1.09
MW	-2.39	-0.14	1.85	0.97
LW	-0.52	-0.52	2.01	0.59
8HW	0.35	-0.14	0.41	1.05
MW	-0.02	-0.29	0.75	0.94
LW	0.74	-0.27	0.38	2.06
9HW	EXPOSED	PLATFORM		
MW	EXPOSED	PLATFORM		
LW	EXPOSED	PLATFORM		

TABLE 19d

DURDLE DOOR ONE MONTH SURVEY; PARTICLE SIZE ANALYSIS  
16 FEBRUARY 1983.

PROFILE LOCATION	GRAPHIC MEAN	(Phi units)		KURTOSIS
		SKEWNESS	SORTING	
1HW	-2.97	0.51	0.49	0.89
MW	-3.60	-0.13	1.82	0.81
LW	-3.14	-0.03	0.27	1.02
2BS	-1.47	-0.15	0.59	0.82
HW	-3.11	0.17	0.40	0.89
MW	-1.88	-0.17	0.49	1.05
LW	-3.40	0.03	1.08	1.05
3BS	-0.70	-0.02	1.04	0.88
HW	-2.26	-0.20	1.56	0.49
MW	-3.14	0.68	1.20	0.89
LW	-0.44	-0.09	0.22	1.19
4BS	-0.37	0.79	1.29	0.98
HW	-3.68	-0.29	0.10	3.04
MW	-2.79	0.44	1.23	0.41
LW	-0.94	-0.24	0.22	2.04
5BS	-0.60	0.19	0.67	1.14
HW	-3.76	0.37	0.37	0.95
MW	-2.59	0.44	1.83	0.47
LW	-0.58	0.19	0.41	1.42
6HW	-0.66	0.23	0.60	1.27
MW	-2.50	0.15	1.14	1.25
LW	-3.72	0.64	0.58	1.83
7BS	0.12	-0.10	0.52	0.99
HW	-0.22	0.11	0.90	0.91
MW	-2.80	0.85	0.52	3.39
LW	0.61	-0.13	0.46	1.81
8HW	0.92	-0.47	0.40	0.38
MW	0.01	-0.60	1.88	0.80
LW	-2.48	0.34	1.83	0.71
9HW	-0.54	-0.13	0.35	1.07
MW	-3.09	0.19	0.77	0.78
LW	-1.90	-0.28	0.60	0.82

TABLE 19e

DURDLE DOOR ONE MONTH SURVEY; PARTICLE SIZE ANALYSIS  
21 FEBRUARY 1983.

PROFILE LOCATION	GRAPHIC MEAN	(Phi units)		KURTOSIS
		SKEWNESS	SORTING	
1BS	-2.50	-0.16	0.20	1.03
HW	-3.15	-0.16	0.28	0.85
MW	-3.15	-0.08	0.22	0.93
LW	-3.66	-0.21	0.28	0.82
2BS	-1.80	-0.23	0.49	1.17
HW	-3.09	0.15	0.60	0.92
MW	-1.69	-0.06	0.36	0.95
LW	-1.28	-0.14	0.44	0.89
3BS	-0.99	0.00	0.78	0.98
HW	-3.61	0.50	0.61	0.83
MW	-1.07	-0.21	0.24	0.97
LW	-0.94	-0.42	0.27	1.67
4BS	-1.44	0.17	0.24	1.02
HW	-3.37	0.06	0.57	0.90
MW	-1.53	-0.14	0.24	0.97
LW	-1.45	-0.51	0.26	3.11
5BS	-0.95	0.18	0.56	1.17
HW	-4.33	0.02	0.20	0.98
MW	-0.66	0.10	0.34	1.32
LW	-0.87	-0.17	0.61	1.19
6BS	EXPOSED	PLATFORM		
HW	EXPOSED	PLATFORM		
MW	EXPOSED	PLATFORM		
LW	EXPOSED	PLATFORM		
7BS	0.09	-0.11	0.59	1.00
HW	-0.02	-0.04	1.06	0.87
MW	1.14	-0.13	0.45	1.05
LW	-1.03	0.15	0.22	1.10
8BS	-0.51	-0.41	1.10	0.84
HW	-0.88	-0.29	0.07	0.92
MW	-0.64	-0.01	0.30	1.05
LW	EXPOSED	PLATFORM		
9BS	0.71	-0.30	0.33	1.84
HW	-3.83	0.28	0.29	0.90
MW	-1.11	0.02	0.25	1.08
LW	-1.05	0.06	0.28	0.95

TABLE 19f

DURDLE DOOR ONE MONTH SURVEY; PARTICLE SIZE ANALYSIS  
1 MARCH 1983.

PROFILE LOCATION	GRAPHIC MEAN	(Phi units)		KURTOSIS
		SKEWNESS	SORTING	
1HW	-2.94	-0.11	0.29	1.02
MW	-3.09	-0.19	0.25	0.85
LW	-3.36	-0.15	0.21	1.17
2HW	-3.72	0.17	0.36	0.85
MW	-3.40	-0.24	0.46	0.83
LW	-3.62	-0.06	0.27	1.03
3HW	-2.80	0.70	1.83	0.56
MW	-3.11	0.74	1.39	1.08
LW	-0.64	0.07	0.17	1.01
4BS	-0.87	-0.16	1.17	0.77
HW	-4.00	0.63	0.22	1.85
MW	-1.46	-0.54	0.76	0.55
LW	-0.32	-0.07	0.19	1.18
5HW	-3.26	0.92	1.39	0.80
MW	-2.52	0.46	1.57	0.59
LW	0.75	-0.10	0.14	1.14
6HW	0.42	-0.22	0.42	1.02
MW	-1.51	-0.27	1.34	0.85
LW	-0.73	-0.10	0.22	1.43
7HW	0.41	0.01	0.38	1.09
MW	-0.19	-0.70	0.60	2.50
LW	-0.73	-0.10	0.22	1.43
8HW	-0.93	-0.01	0.32	1.37
MW	-2.82	0.48	1.59	0.53
LW	-1.05	0.01	0.23	0.98
9HW	-2.27	-0.36	1.55	0.55
MW	-3.57	0.60	0.69	0.90
LW	-3.70	0.38	0.46	0.75



TABLE 20a

DURDLE DOOR ONE MONTH SURVEY; PARTICLE SHAPE ANALYSIS  
25 JANUARY 1983.

PROFILE LOCATION	MEAN ELONG.	MEAN FLAT.	MEAN SPHER.	SNEED & FOLK	ZINGG
1BS	1.60	2.22	0.61	VP 7	B 14
				VB 25	D 22
				VE 20	R 13
1HW	1.60	2.24	0.61	VP 7	S 1
				VB 24	B 19
				VE 19	D 19
1MW	1.54	2.02	0.65	VP 7	R 10
				VB 19	S 2
				VE 24	B 8
1LW	1.45	2.05	0.65	VP 5	D 17
				VB 31	R 18
				VE 14	S 7
2HW	1.52	1.96	0.67	VP 6	B 9
				VB 22	D 19
				VE 22	R 14
3HW	1.45	2.11	0.64	VP 10	S 8
				VB 23	B 8
				VE 17	D 24
4HW	1.47	2.54	0.58	VP 3	R 11
				VB 41	S 7
				VE 6	B 17
					D 27
					R 3
					S 3

TABLE 20b

DURDLE DOOR ONE MONTH SURVEY; PARTICLE SHAPE ANALYSIS  
 30 JANUARY 1983.

PROFILE LOCATION	MEAN ELONG.	MEAN FLAT.	MEAN SPHER.	SNEED & FOLK	ZINGG
1HW	1.58	2.24	0.58	VP 5	B 17
				VB 28	D 20
				VE 18	R 14
1MW	1.57	2.19	0.62		S 1
				VP 6	B 12
				VB 26	D 18
				VE 18	R 14
1LW	1.48	2.14	0.63		S 4
				VP 11	B 12
				VB 26	D 24
				VE 13	R 10
					S 4

TABLE 20c  
 DURDLÉ DOOR ONE MONTH SURVEY; PARTICLE SHAPE ANALYSIS  
 8 FEBRUARY 1983.

PROFILE LOCATION	MEAN ELONG.	MEAN FLAT.	MEAN SPHER.	SNEED & FOLK	ZINGG
1BS	1.50	2.03	0.64	VP 3 VB 33 VE 14	B 14 D 20 R 12 S 4
HW	1.53	1.98	0.67	VP 5 VB 25 VE 20	B 16 D 18 R 14 S 2
MW	1.53	1.98	0.67	VP 4 VB 27 VE 19	B 12 D 21 R 11 S 6
LW	1.46	2.18	0.62	VP 11 VB 26 VE 13	B 10 D 27 R 10 S 3
2HW	1.56	1.97	0.66	VP 2 VB 28 VA 20	B 12 D 13 R 28 S 7
MW	1.52	1.99	0.66	VP 7 VB 28 VE 15	B 9 D 22 R 14 S 5
LW	1.44	1.78	0.70	VP 9 VB 20 VE 13	B 5 D 19 R 13 S 13
3HW	1.53	2.39	0.59	VP 11 VB 23 VE 16	B 10 D 26 R 11 S 3
MW	1.52	2.31	0.59	VP 10 VB 31 VE 9	B 17 D 24 R 7 S 2
LW	1.54	2.19	0.61	VP 3 VB 33 VE 14	B 13 D 25 R 10 S 2
4HW	1.46	2.18	0.62	VP 8 VB 33 VE 9	B 12 D 24 R 9 S 5
MW	1.58	2.04	0.65	VP 4 VB 21 VE 25	B 9 D 17 R 21 S 3
LW	1.53	2.07	0.65	VP 5 VB 25 VE 20	B 11 D 18 R 14 S 7

TABLE 20d

DURDLE DOOR ONE MONTH SURVEY; PARTICLE SIZE ANALYSIS  
16 FEBRUARY 1983.

PROFILE LOCATION	MEAN ELONG.	MEAN FLAT.	MEAN SPHER.	SNEED & FOLK	ZINGG
1MW	1.46	2.22	0.62	VP 9	B 10
				VB 27	D 21
				VE 14	R 13
2HW	1.46	1.99	0.65	VP 7	S 6
				VB 29	B 9
				VE 14	D 21
4HW	1.38	2.27	0.61	VP 14	R 13
				VB 28	S 7
				VE 8	B 6
6LW	1.42	2.01	0.66	VP 12	D 34
				VB 24	R 5
				VE 14	S 5
7MW	1.45	2.23	0.61	VP 7	B 5
				VB 35	D 28
				VE 8	R 9
					S 8
					B 13
					D 23
					R 7
					S 7

TABLE 20e

DURDLE DOOR ONE MONTH SURVEY; PARTICLE SHAPE ANALYSIS  
21 FEBRUARY 1983.

PROFILE LOCATION	MEAN ELONG.	MEAN FLAT.	MEAN SPHER.	SNEED & FOLK	ZINGG
1BS	1.61	2.13	0.63	VP 4	B 16
				VB 23	D 14
				VE 23	R 14
HW	1.52	2.50	0.58	VP 10	S 1
				VB 27	B 23
				VE 13	D 20
MW	1.56	2.03	0.65	VP 2	R 7
				VB 29	S 6
				VE 19	B 15
LW	1.51	1.94	0.67	VP 5	D 17
				VB 25	R 15
				VE 20	S 3
2HW	1.46	2.03	0.65	VP 10	B 12
				VB 26	D 18
				VE 14	R 15
3HW	1.46	2.27	0.60	VP 10	S 5
				VB 30	B 12
				VE 10	D 25
4HW	1.48	2.49	0.57	VP 10	R 10
				VB 29	S 3
				VE 11	B 17
5HW	1.43	2.11	0.63	VP 12	D 28
				VB 28	R 4
				VE 13	S 1
9HW	1.48	2.21	0.61	VP 10	B 8
				VB 31	D 26
				VE 9	R 10
					S 6
					B 12
					D 30
					R 6
					S 2

TABLE 20f  
DURDLE DOOR ONE MONTH SURVEY; PARTICLE SHAPE ANALYSIS  
1 MARCH 1983.

PROFILE LOCATION	MEAN ELONG.	MEAN FLAT.	MEAN SPHER.	SNEED & FOLK	ZINGG
1HW	1.57	2.22	0.61	VP 9 VB 26 VE 15	B 12 D 23 R 14 S 1
MW	1.49	2.25	0.60	VP 9 VB 27 VE 13	B 13 D 28 R 27 S 0
LW	1.53	2.23	0.61	VP 9 VB 24 VE 17	B 14 D 20 R 13 S 3
2HW	1.51	1.95	1.67	VP 4 VB 27 VE 19	B 11 D 16 R 13 S 10
MW	1.60	2.01	0.65	VP 3 VB 23 VE 24	B 15 D 9 R 20 S 6
3HW	1.43	1.81	0.69	VP 10 VB 19 VE 21	B 3 D 18 R 18 S 11
MW	1.42	1.80	0.69	VP 7 VB 27 VE 16	B 5 D 17 R 10 S 18
4HW	1.33	1.82	0.69	VP 8 VB 31 VE 11	B 1 D 24 R 5 S 20
5HW	1.32	1.84	0.69	VP 10 VB 26 VE 14	B 1 D 26 R 8 S 15
8MW	1.44	1.84	0.69	VP 8 VB 25 VE 17	B 5 D 17 R 15 S 13
9HW	1.42	1.65	0.74	VP 4 VB 17 VE 29	B 3 D 9 R 15 S 23
MW	1.48	2.08	0.65	VP 7 VB 25 VE 18	B 10 D 18 R 15 S 9
LW	1.46	1.92	0.67	VP 9 VB 25 VE 16	B 7 D 21 R 13 S 9

TABLE 21.

DURDLE DOOR ONE MONTH SURVEY;  
 SELECTED LITTORAL OBSERVATION DATA.

DATE	WIND		DIR.	WAVE		MAX. BREAKER HEIGHT	TIME LOW WATER
	AV. VEL. (knts.)	GUST		PERIOD	DIR.		
25.1.83	02	02	190	10	SW	1.5m	0736
26.1.83	07	11	200	10	SW	1.5m	0851
27.1.83	17	25	230	7	S	2.0m	0954
28.1.83	16	24	330	7	S	1.5m	1050
29.1.83	13	18	270	7	S	1.0m	1140
30.1.83	25	32	260	7	SW	0.7m	1225
31.1.83	10	19	240	8	SW	1.5m	1311
01.2.83	25	34	270	10	SW	2.0m	1356
02.2.83	10	20	290	10	SW	0.7m	1441
03.2.83	06	14	310	10	SW	0.5m	1525
04.2.83	06	16	080	10	SW	0.5m	1607
05.2.83	14	26	300	10	SW	0.7m	1649
06.2.83	18	31	360	10	SW	0.8m	1741
07.2.83	18	20	030	10	SW	0.7m	1856
08.2.83	15	20	020	5/10	SE/SW	0.5m	0756
09.2.83	12	17	010	5/10	SE/SW	0.5m	0912
10.2.83	21	33	020	5/10	SE/SW	0.5m	1008
11.2.83	15	21	030	5/10	SE/SW	0.3m	1051
12.2.83	06	10	060	5/10	SE/SW	0.5m	1128
13.2.83	11	20	040	5/10	SE/SW	0.7m	1200
14.2.83	13	26	070	8	SE	1.0m	1228
15.2.83	14	23	050	5	SE	0.6m	1258
16.2.83	12	21	040	8	SE	1.0m	1331
17.2.83	09	18	060	8	SE	1.0m	1404
18.2.83	06	13	090	5	SE	1.5m	1439
19.2.83	13	19	060	5	SE	1.5m	1512
20.2.83	10	19	100	6	SE	1.5m	1550
21.2.83	10	20	100	10	SE	1.5m	1648
22.2.83	14	24	100	5	SE	1.5m	1819

TABLE 22

RINGSTEAD PARTICLE SIZE ANALYSIS AUGUST 1984

PROFILE & LOCATION	GRAPHIC MEAN	(Phi units)		KURTOSIS
		SKEWNESS	SORTING	
1BS	-4.06	0.43	0.31	1.19
HW	-3.88	0.25	0.44	0.79
2HW	-3.94	0.47	0.26	0.98
MW	-3.95	0.47	0.21	1.06
LW	-2.10	-0.22	0.84	0.80
3BS	-3.50	0.04	0.39	0.99
HW	-3.57	-0.05	0.41	5.09
MW	-2.49	0.79	2.15	0.81
LW	-3.30	0.09	0.68	1.12
4BS	-2.07	0.08	0.69	0.95
HW	-3.44	0.09	0.67	0.94
MW	1.82	0.06	0.50	2.36
LW	-2.99	0.54	1.04	1.47
5BS	-2.47	-0.04	0.59	1.11
HW	-3.31	0.13	0.52	0.80
MW	-2.78	-0.07	0.51	0.96
LW	-2.69	-0.02	0.50	0.69
6BS	-2.83	0.02	0.45	0.86
HW	-2.30	-0.30	0.51	0.80
MW	-2.46	-0.17	0.58	0.77
LW	-2.55	-0.66	0.49	0.89



TABLE 23

## DURDLE DOOR PARTICLE SIZE ANALYSIS AUGUST 1984

PROFILE & LOCATION	GRAPHIC MEAN	(Phi units)		KURTOSIS
		SKEWNESS	SORTING	
1BS	-2.45	0.06	0.36	1.04
HW	-3.05	0.11	0.21	1.00
MW	-2.97	-0.12	0.25	1.10
2BS	-1.85	-0.38	1.02	0.98
HW	-3.31	-0.06	0.34	1.03
MW	-3.78	0.18	0.35	0.76
LW	-3.87	-0.10	0.47	0.91
3BS	-2.71	-0.04	0.77	0.97
HW	-2.80	-0.01	0.38	0.95
MW	-3.86	0.11	0.51	0.85
LW	-3.46	-0.10	0.69	0.94
4BS	-2.37	-0.11	0.48	1.03
HW	-4.09	0.31	0.52	0.76
MW	-3.06	-0.31	0.48	0.88
LW	-3.85	-0.05	0.59	0.68
5BS	-0.81	-0.16	0.38	1.25
HW	-3.99	0.21	0.42	0.90
MW	-3.19	0.05	0.33	1.08
LW	-3.88	-0.28	0.82	0.74
6BS	-1.71	-0.53	0.55	1.53
HW	-3.85	-0.06	0.56	0.87
MW	-3.31	-0.05	0.28	1.04
LW	-3.48	-0.05	0.30	0.82
7HW	-4.00	0.20	0.57	0.73
MW	-2.96	0.06	0.37	0.94
LW	-3.57	-0.17	0.49	0.68
8BS	-1.94	-0.11	0.66	1.20
HW	-3.08	0.02	0.41	1.09
MW	-2.97	0.16	0.30	1.03
LW	-3.45	-0.21	0.36	0.96
9BS	-2.69	-0.02	0.79	0.88
HW	-3.84	0.31	0.31	0.65
MW	-4.21	0.22	0.34	1.50
LW	-3.83	0.57	0.35	0.70

TABLE 24

MAN O'WAR PARTICLE SIZE ANALYSIS AUGUST 1984

PROFILE & LOCATION	GRAPHIC MEAN	(Phi units)		KURTOSIS
		SKEWNESS	SORTING	
1HW	-4.15	0.75	0.80	1.19
MW	-5.53	0.42	0.64	1.12
LW	-4.33	0.73	0.44	1.51
2BS	-3.16	0.07	1.43	1.11
HW	-3.36	0.38	0.32	1.00
MW	-3.75	0.51	0.60	1.04
LW	-3.40	0.04	0.71	0.82
3BS	-2.54	0.12	0.58	0.94
HW	-2.22	-0.01	0.77	1.01
MW	-1.69	-0.26	0.38	1.67
LW	-2.20	-0.32	0.80	1.00

TABLE 25

MUPE PARTICLE SIZE ANALYSIS AUGUST 1984

PROFILE & LOCATION	GRAPHIC MEAN	(Phi units)		KURTOSIS
		SKEWNESS	SORTING	
1BS	1.66	-0.44	0.53	1.33
HW	-3.13	-0.05	0.60	0.94
MW	-2.76	0.11	0.79	1.04
LW	-1.55	-0.25	1.27	0.70
2BS	-4.69	-0.03	0.17	0.86
HW	-4.67	-0.08	0.49	0.62
MW	-4.67	-0.25	0.45	1.19
LW	-4.61	0.16	0.62	0.79
3BS	-3.46	0.03	0.36	1.13
HW	-4.02	0.35	0.49	0.64
MW	-2.87	-0.07	0.62	1.14
LW	-1.93	-0.13	1.09	0.93

TABLE 26

WORBARROW PARTICLE SIZE ANALYSIS AUGUST 1984.

PROFILE & LOCATION	GRAPHIC MEAN	(Phi units)		KURTOSIS
		SKEWNESS	SORTING	
1BS	-3.47	-0.09	0.38	0.98
HW	-2.88	0.22	0.88	0.97
MW	-2.01	0.01	1.45	0.70
LW	-2.75	0.40	1.20	0.87
2BS	-4.14	0.27	0.33	1.30
HW	-3.24	-0.25	0.39	1.12
MW	-3.85	0.19	0.43	0.82
LW	-3.71	0.24	0.58	0.86
3BS	0.13	0.13	0.21	0.10
HW	-4.49	-0.58	0.24	1.49
MW	-3.89	0.58	0.30	0.76
LW	-4.44	0.12	0.64	0.82
4BS	-3.62	-0.08	0.28	1.11
HW	-4.48	0.02	0.53	0.97
LW	-4.03	0.43	0.59	0.76

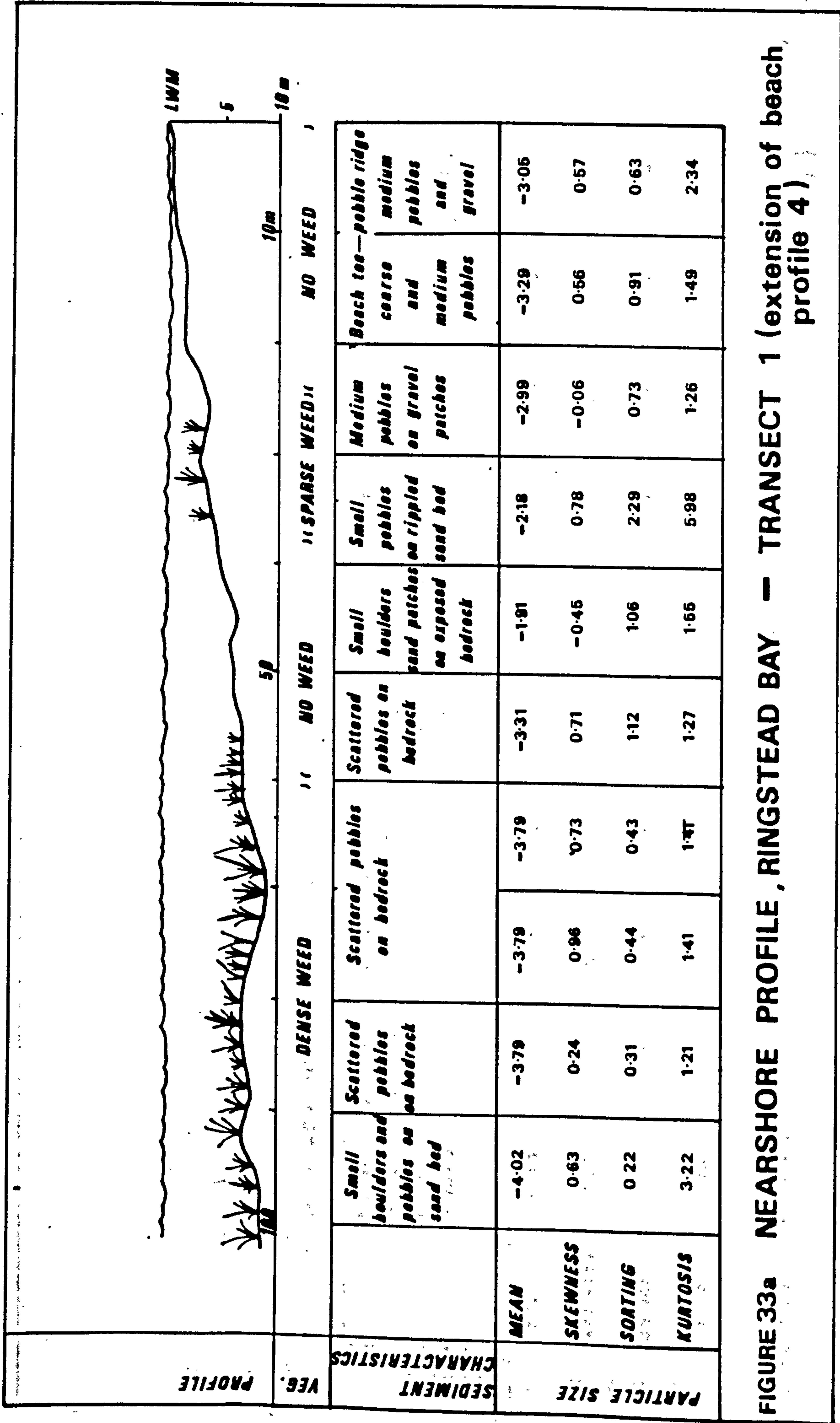


FIGURE 33a NEARSHORE PROFILE, RINGSTEAD BAY — TRANSECT 1 (extension of beach profile 4)

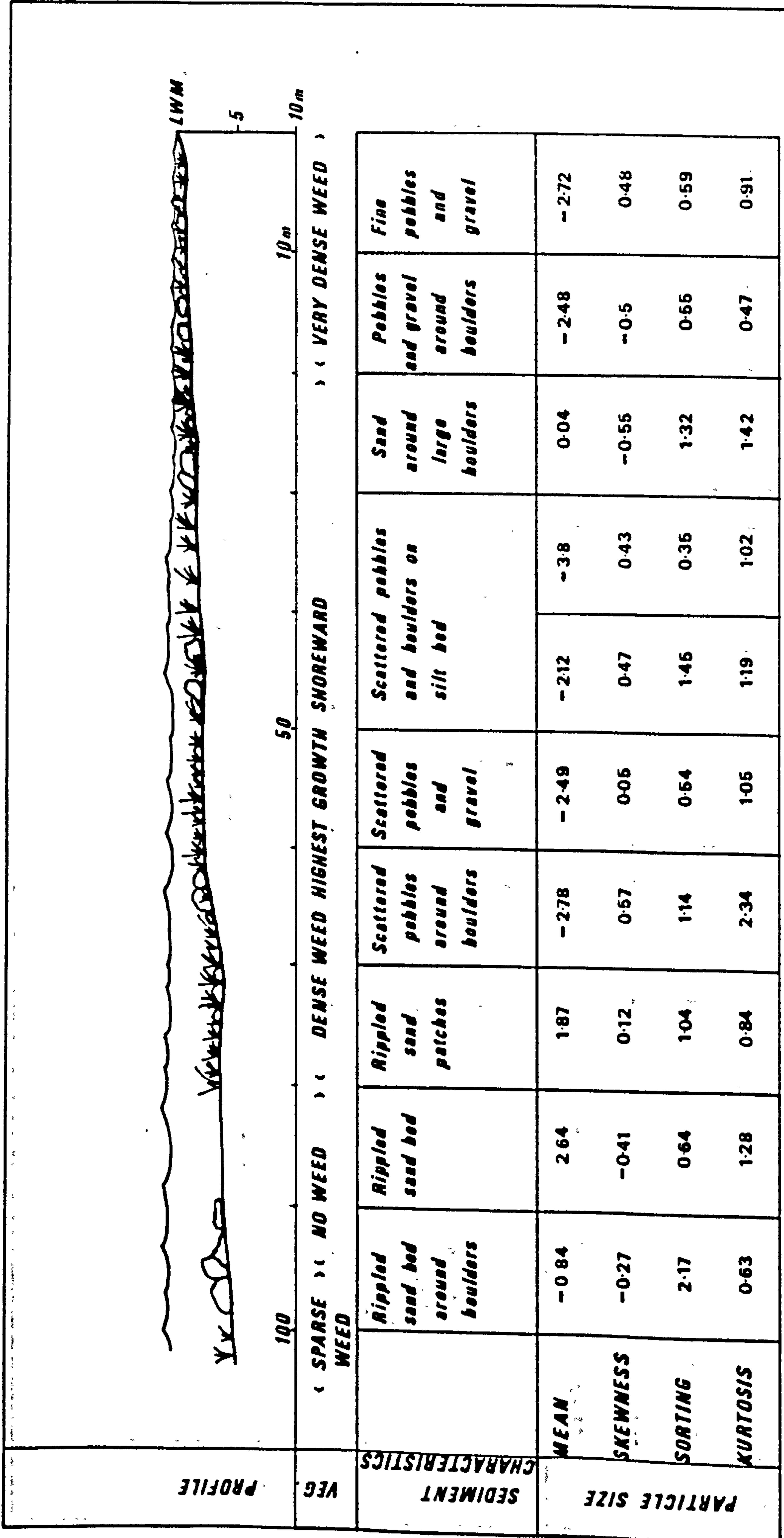


FIGURE 33b NEARSHORE PROFILE, RINGSTEAD BAY -- TRANSECT 2 (extension of beach profile 6)

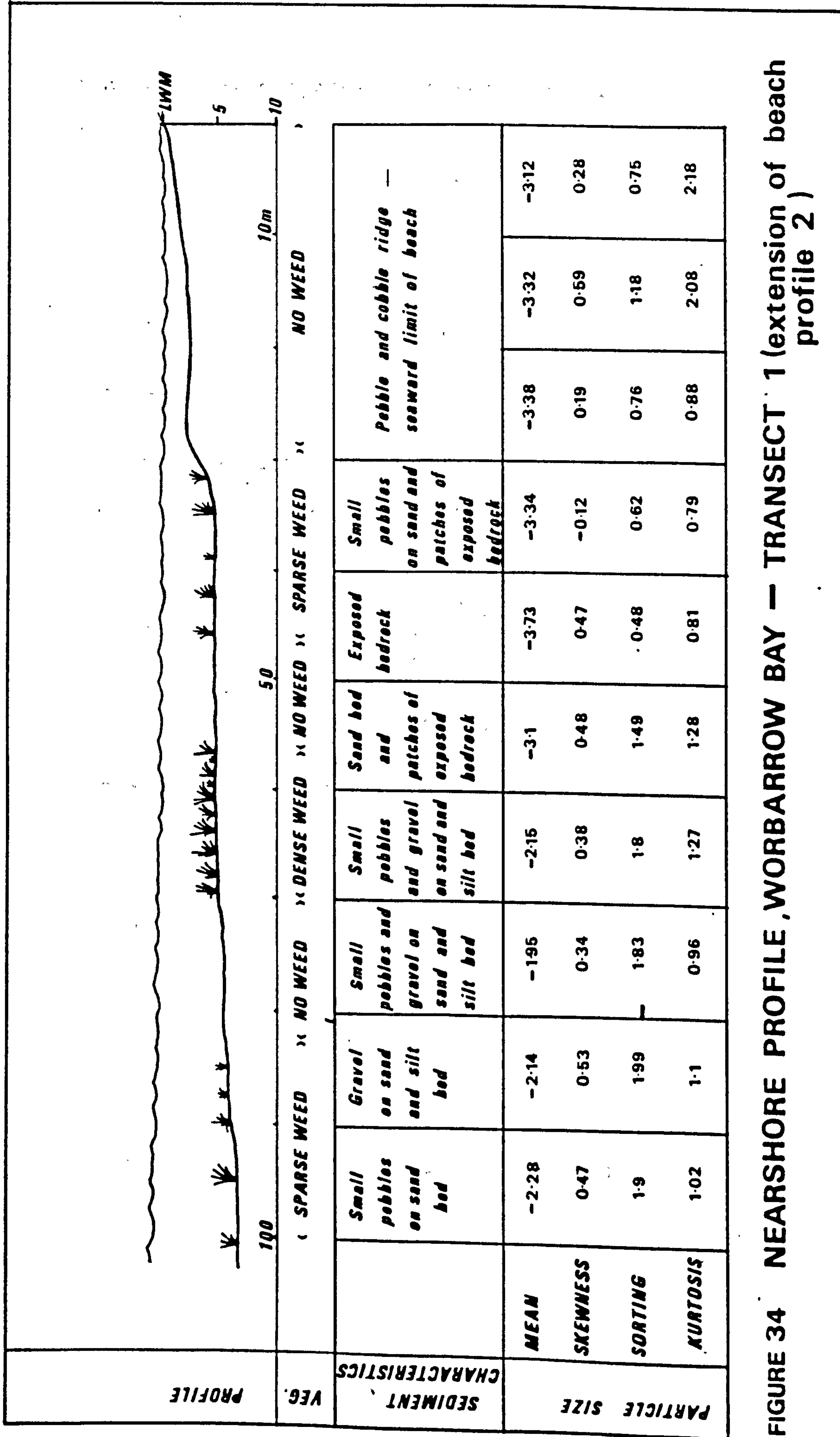


FIGURE 34 NEARSHORE PROFILE, WORBARROW BAY — TRANSECT 1 (extension of beach profile 2)

TABLE 27

SEDIMENT CHARACTERISTICS (DIVE DATA):-

RINGSTEAD BAY-TRANSECT 1(off beach profile 4)

Sample at:-

10m.	80% P;G,S,fS.
20m.	80% P;G,S,fS.
30m.	75% P;G,S,fS.
40m.	75% P;S,fS,G.
50m.	50% fS;S,coral fragments.
60m.	75% P;G,S,fS.
70m.	90% P;G,S,fS.
80m.	100% P.
90m.	95% P;G.
100m.	95% P;G.

RINGSTEAD BAY-TRANSECT 2(off beach profile 6).

Sample at:-

10m.	65% P;G,S,fS.
20m.	50% P;G,S,fS.
30m.	65% S;G,P,fS.
40m.	90% P;G.
50m.	55% P;G,S,fS.
60m.	75% P;G,S,fS.
70m.	75% P;G,S,fS.
80m.	50% S;fS,G.
90m.	80% fS;S,G.
100m.	50% S;P,fS,G.

WORBARROW BAY-TRANSECT 1(off beach profile 2).

Sample at:-

10m.	80% P;S,G,fS.
20m.	75% P;fS,S,G.
30m.	90% P;G,S.
40m.	90% P;G,S.
50m.	95% P;G,S.
60m.	70% P;G,S,fS.
70m.	50% P;G,S,fS.
80m.	45% P;G,S,fS.
90m.	50% P;G,S,fS.
100m.	50% P;G,S,fS.

SEDIMENT CHARACTERISTICS:-

P	PEBBLE
G	GRAVEL
S	SAND
fS	FINE SAND



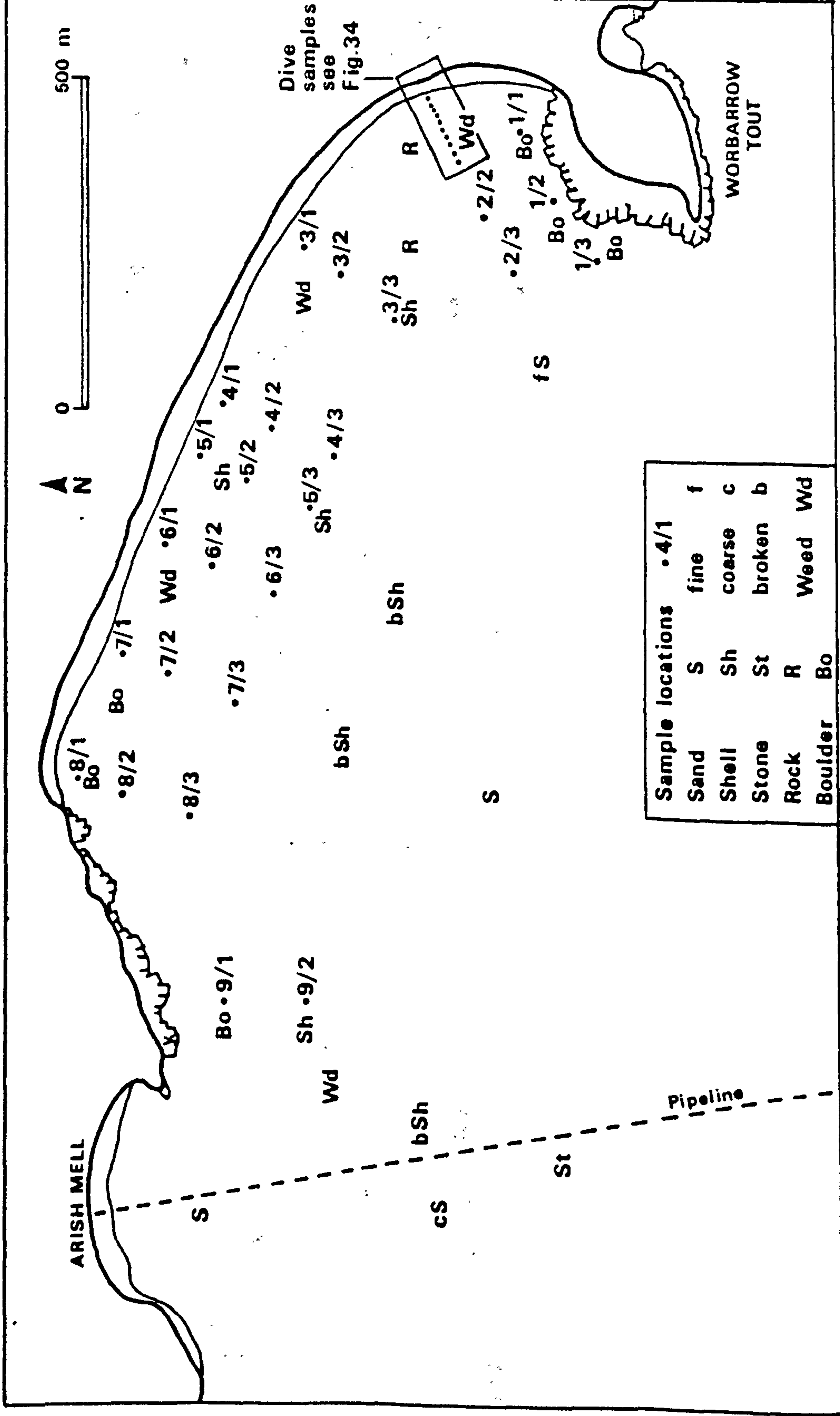


FIGURE 35 SEDIMENT SURVEY BY VAN VEEN GRAB WORBARROW BAY, AUGUST 1984

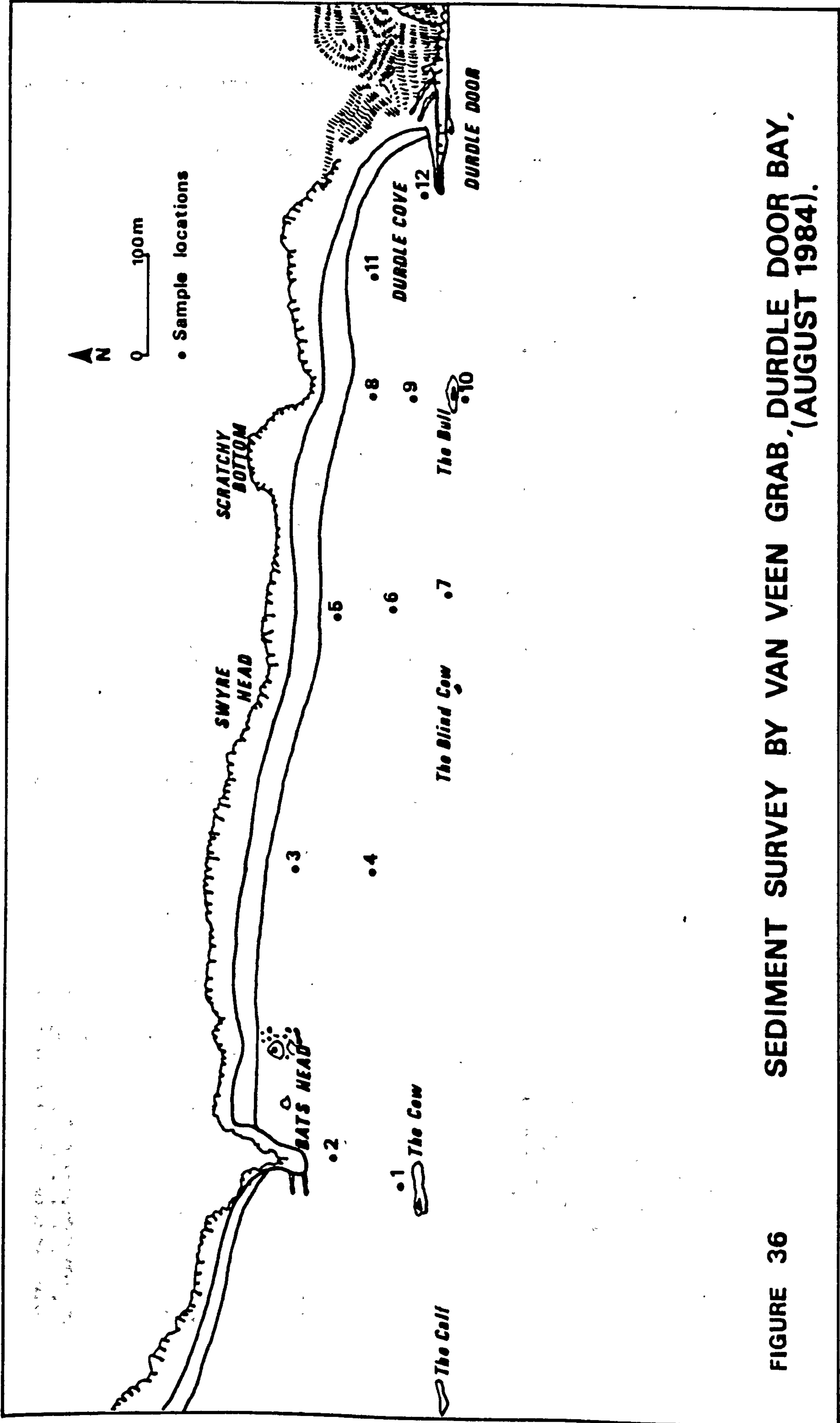


FIGURE 36 SEDIMENT SURVEY BY VAN VEEN GRAB, DURDLÉ DOOR BAY, (AUGUST 1984).

TABLE 28

## WORBARROW BAY GRAB SAMPLE DATA AUGUST 1984

SAMPLE SITE/ NUMBER	(DESCRIPTIVE STATISTICS-phi units)			
	MEAN	SKEWNESS	SORTING	KURTOSIS
1.1	NO SAMPLE(BOULDERS AND WEED)			
1.2	NO SAMPLE(BOULDERS AND WEED)			
1.3	NO SAMPLE(BOULDERS AND WEED)			
2.1	NO SAMPLE(WEED)			
2.2	-3.31	0.85	1.18	2.12
2.3	NO SAMPLE(WEED)			
3.1	NO SAMPLE(WEED)			
3.2	0.8	0.07	0.99	0.89
3.3	(BROKEN SHELL)			
4.1	0.70	0.20	0.43	0.85
4.2	2.88	-0.14	0.40	0.30
4.3	2.72	-0.23	0.38	1.0
5.1	(BROKEN SHELL)			
5.2	(WHOLE SHELL)			
5.3	(WHOLE SHELL)			
6.1	1.02	0.18	0.53	1.60
6.2	2.44	0.16	0.63	0.83
6.3	2.43	-0.8	0.52	1.10
7.1	NO SAMPLE(BOULDERS)			
7.2	2.44	-0.09	0.53	1.42
7.3	2.66	0.01	0.49	0.97
8.1	NO SAMPLE(BOULDER)			
8.2	0.62	0.49	1.11	1.44
8.3	-0.59	0.16	0.77	1.90
9.1	NO SAMPLE (BOULDER)			
9.2	(WHOLE SHELL)			
9.3	(WHOLE SHELL)			

## GENERAL SEDIMENT CHARACTERISTICS OF SAMPLES:

## SAMPLE NO.

2.2	>80%P;S,G.	
3.2	>60%S:fS,G,bSh,P.	
4.1	>90%fS;S.	SEDIMENT GRADE:- P=Pebble grades. G=Gravel(granules) S=Sand(coarse grades) fS=Fine sand. bSh=Broken shell
4.2	>90%fS;S,G.	
4.3	>90%fS;S.	
6.1	>90%S;fS,G,P.	
6.2	>79%fS;S.	
6.3	>70%fS;S.	
7.2	>90%fS;S.	
7.3	>90%fS;S.	
8.2	>65%S;fS,G,P.	
8.3	>40%S;G,P,fS.	

TABLE 29

DURDLE DOOR GRAB SAMPLE DATA AUGUST 1984

SAMPLE SITE/ NUMBER	(DESCRIPTIVE STATISTICS-phi units)			
	MEAN	SKEWNESS	SORTING	KURTOSIS
1.	-0.33	0.04	0.67	0.93
2.	NO SAMPLE(WEED ON BEDROCK)			
3.	NO SAMPLE(WEED ON BEDROCK)			
4.	NO SAMPLE(WEED ON BEDROCK)			
5.	-3.41	-0.09	1.00	1.03
6.	-0.98	-0.07	0.54	1.27
7.	0.75	0.17	0.71	1.15
8.	-3.58	0.43	1.08	0.90
9.	-2.26	-0.10	0.83	0.75
10.	-2.58	-0.38	1.38	0.94
11.	-3.23	-0.06	1.80	0.77
12.	-2.87	0.02	0.40	0.90

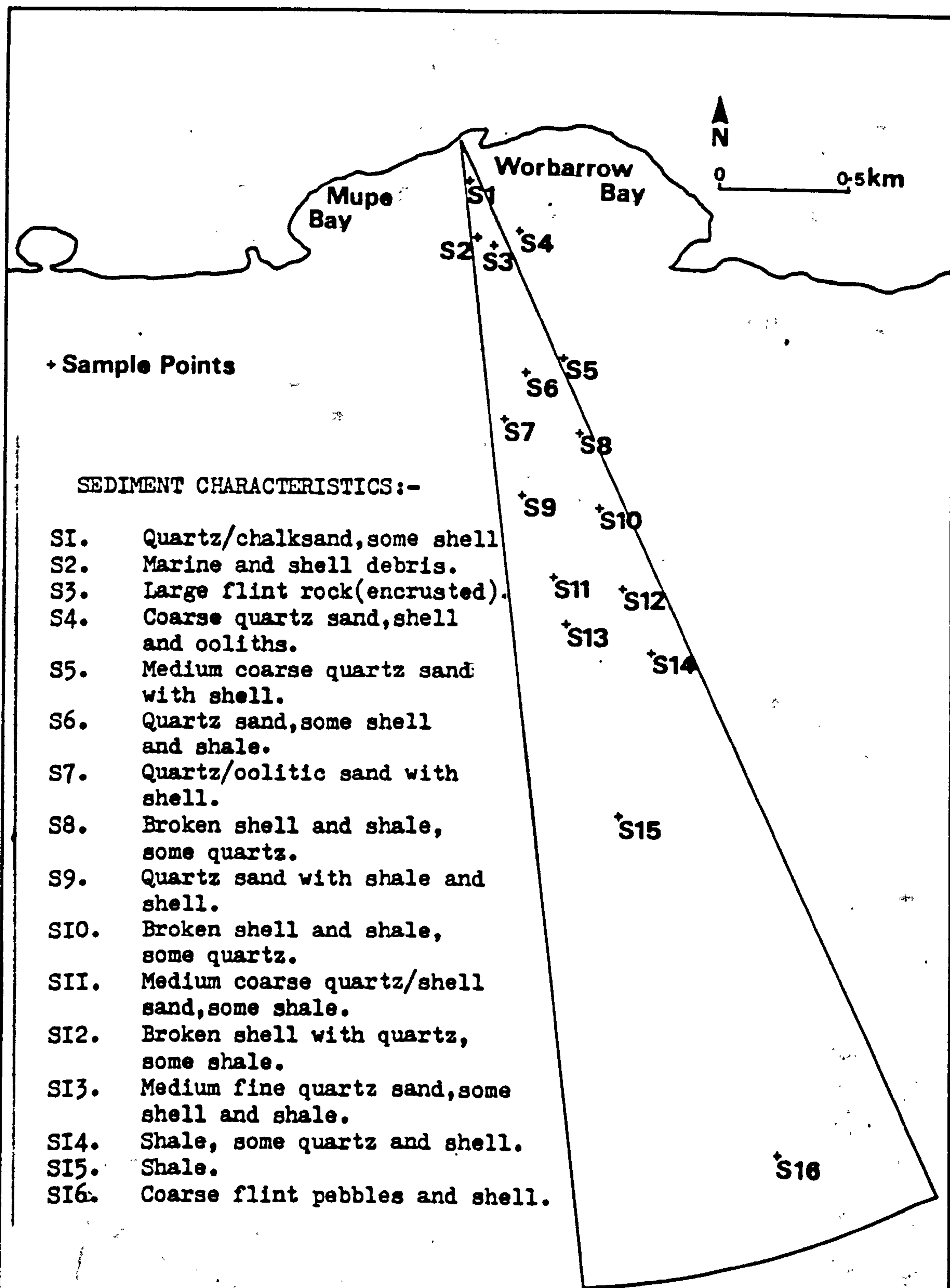
GENERAL SEDIMENT CHARACTERISTICS OF SAMPLES

SAMPLE NUMBER:

- 1. >35%G; S, P, fS.
- 5. >80%P;G, S.
- 6. >50%S;G, P.
- 7. >85%S;fS, Sh.
- 8. >75%P;G, S.
- 9. >55%P;G, S.
- 10. >55%P;G, S.
- 11. >80%P;G, S.
- 12. >80%P;G, S.

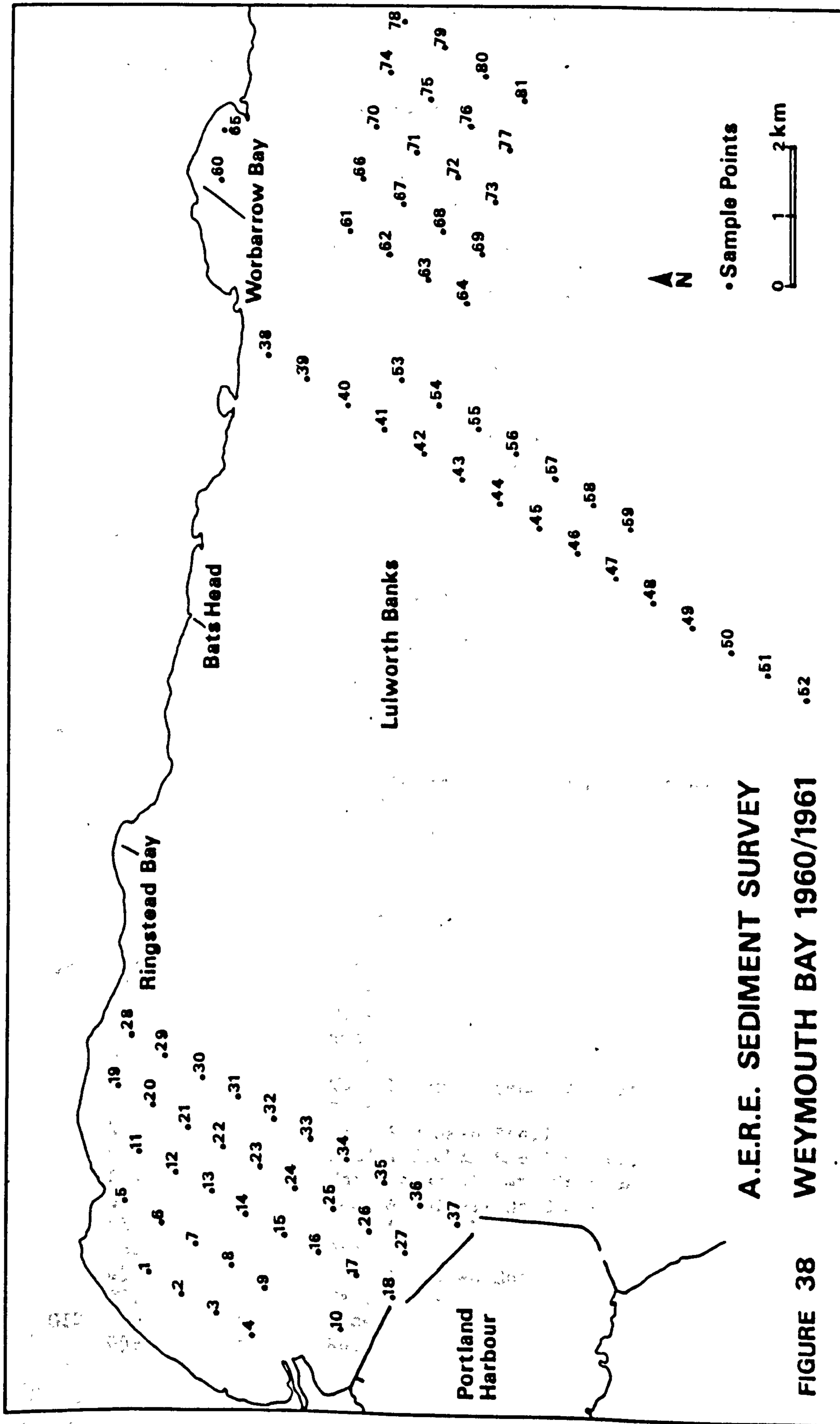
SEDIMENT GRADE:-

- P=Pebble grades.
- G=Gravel(granules).
- S=Sand(coarse grades).
- fS=Fine sand.



**FIGURE 37 A.E.R.E. SEDIMENT SURVEY 1956**

(MULLER, HAWES & POWNALL 1958)



A.E.R.E. SEDIMENT SURVEY

WEYMOUTH BAY 1960/1961

FIGURE 38

.52

## KEY TO FIGURE 38

## A.E.R.E. SEDIMENT SURVEY RESULTS; WEYMOUTH BAY 1960/1961

DECCA REF.	SAMPLE No:	NATURE OF SEABED	
Red Purple			
FI6	G60	1	Fine Sand
	G59	2	Fine Sand
	G58	3	Fine Sand
	G57	4	Pebbles
FI7	G6I	5	Sand On Clay
	G60	6	Fine Sand
	G59	7	Mud, Gravel & Pebbles
	G58	8	Pebbles & Mud
	G57	9	Mud, Gravel & Pebbles
	G55	10	Sand & Mud
FI8	G6I	11	Fine Sand & Mud
	G60	12	Fine Sand & Mud
	G59	13	Fine Sand & Mud
	G58	14	Sand & Gravel
	G57	15	Sand, Mud & Shingle
	G56	16	Sand, Mud & Shingle
	G55	17	Sand, Mud & Shingle
	G54	18	Sand & Mud
FI9	G62	19	Sand & Mud
	G6I	20	Mud
	G60	21	Rock
	G59	22	Sand & Mud
	G58	23	Sand & Mud
	G57	24	Sand, Mud & Gravel
	G56	25	Mud
	G55	26	Mud
	G54	27	Mud
F20	G62	28	Rock
	G6I	29	Sand
	G60	30	Thin Layer Of Mud & Sand On Rock
	G59	31	Mud & Sand
	G58	32	Mud & Sand
	G57	33	Mud
	G56	34	Mud
	G55	35	Mud
	G54	36	Mud & Shells
	G53	37	Mud
G9	G63	38	Rock
	G62	39	Rock
	G6I	40	Rock
	G60	41	Rock
	G59	42	Rock
	G58	43	Thin Layer Of Sand On Rock
	G57	44	Rock
	G56	45	Sand & Broken Shell
	G55	46	Sand & Broken Shell On Rock
	G54	47	Thin Layer Of Sand On Rock
	G53	48	Sand & Shingle On Shale
	G52	49	Sand & Gravel
	G5I	50	Rock
	G50	51	Sand & Broken Shell
	F79	52	Sand & Shell
G10	G60	53	Rock
	G59	54	Rock

Cont.

DECCA REF.	SAMPLE No:	NATURE OF SEABED	
Red Purple			
GI0	G58	55	Rock
	G57	56	Thin Layer Of Fine Sand & Shell On Rock
	G56	57	Thin Layer Of Sand On Rock
	G55	58	Rock
	G54	59	Mud
GII.5	G65.1	60	Sand,Gravel & Broken Shell
GI2	G62	61	Broken Shell & Coral
	G6I	62	Broken Shell
	G60	63	Sand,Gravel & Broken Shell
	G59	64	Sand,Shingle & Broken.Shell
GI2.5	G55.3	65	Fine Sand
GI3	G62	66	Sand,Gravel & Broken Shell
	G6I	67	Sand
	G60	68	Sand On Rock
	G59	69	Sand & Shale
GI4	G62	70	Sand & Broken Shell
	G6I	71	Sand,Gravel & Broken Shell
	G60	72	Sand
	G59	73	Sand,Shale & Shell
GI5	G62	74	Broken Shell & Coral
	G6I	75	Sand
	G60	76	Sand & Broken Shell
	G59	77	Sand,Gravel,Clay & Broken Shell
GI6	G62	78	Gravel & Broken Shell
	G6I	79	Sand On Shale
	G60	80	Sand
	G59	8I	Sand & Fine Broken Shell

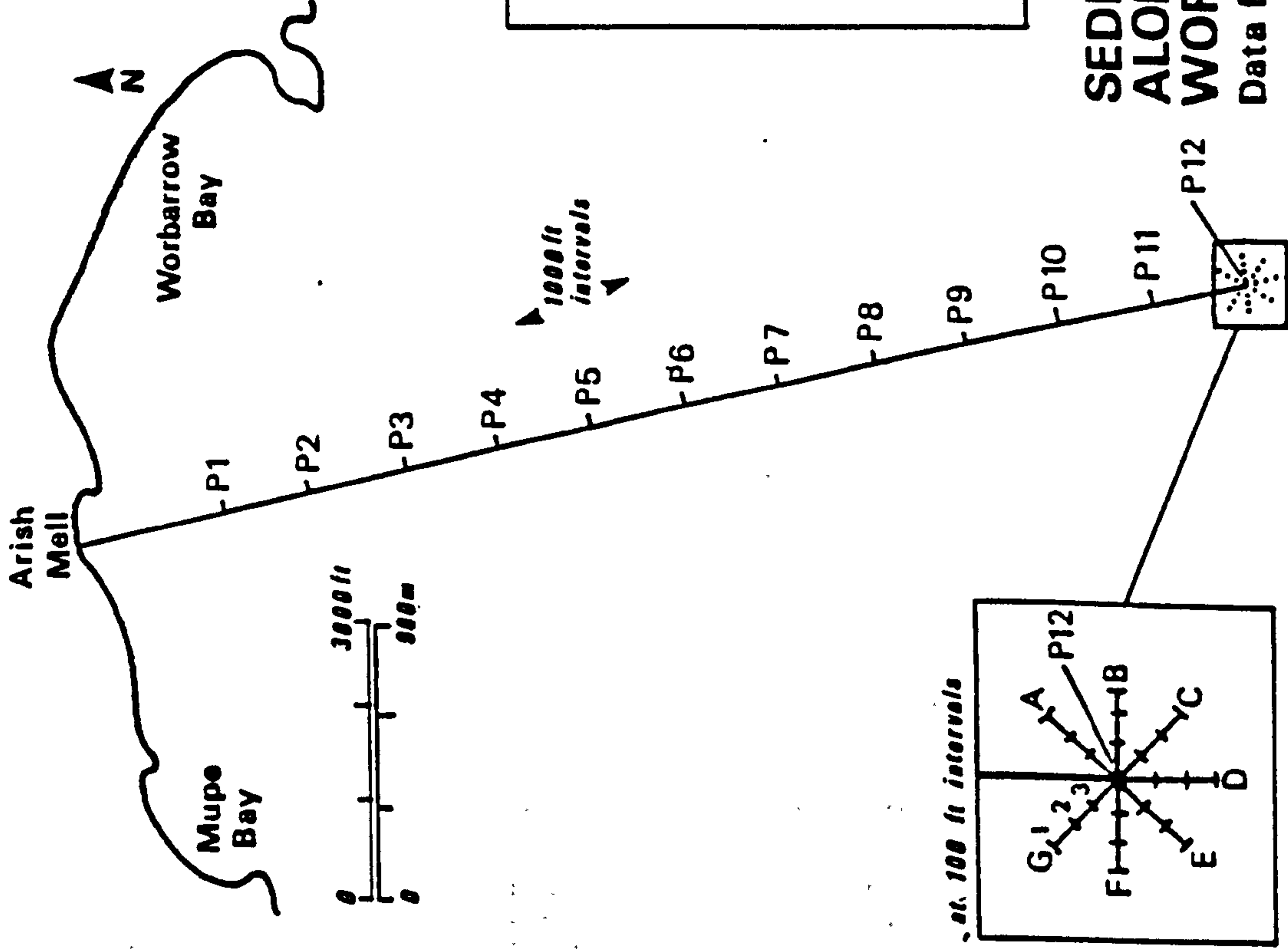


Sample site Sediment characteristics

A	1	S > 50%, St, cbSh
	2	S > 70%, fbSh, fs
	3	S > 50%, fbSh
B	1	S > 40%, bSh, mSt
	2	S > 40%, sl, bSh
	3	S > 75%, bSh, fst
C	1	S > 50%, bSh, St, sl
	2	S > 60%, bSh, fsh
	3	S > 60%, fbsh, sl
D	1	S > 70%, fbsh, msl
	2	S > 80%, bSh, fbSl
	3	S > 60%, csl, fbSh
E	1	S > 90%, fbsh
	2	S > 70%, bSh, mSt
	3	S > 60%, cbSh, St
F	1	S > 50%, bSh, csl
	2	S > 90%, fbsh
	3	S > 30%, csl, bSh
G	1	S > 80%, cbSh, fsl
	2	S > 80%, fsl
	3	S > 70%, bSh, fsl

Sediment Characteristics

S	Sand	f	Fine
Sg	Shingle	m	Medium
Sh	Shell	c	Coarse
sl	Shale	b	Broken
St	Stone		
Mu	Mud		

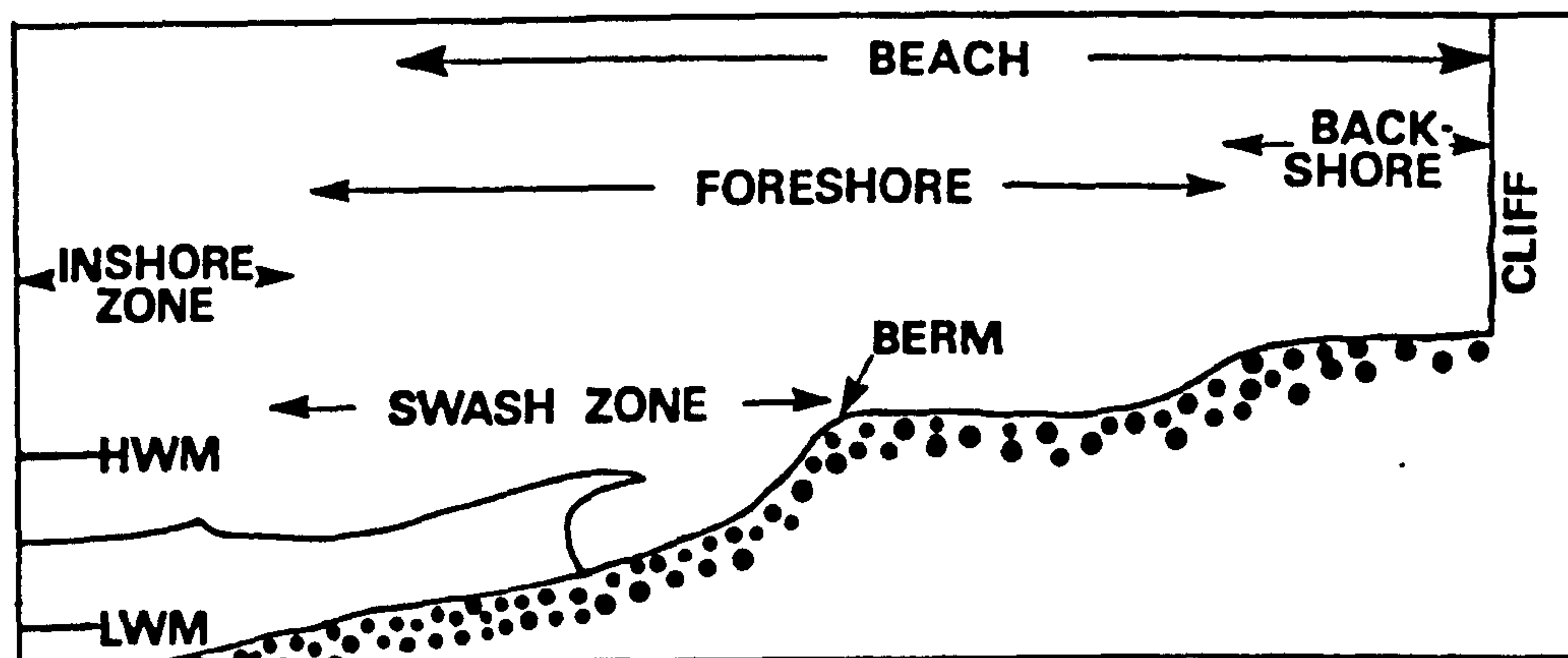


Sample site Sediment characteristics

P	1	mSg, fbSh
	2	bSh, Mu, St
	3	bSh, fSg, Mu
	4	mSg, coral-like St
	5	bsh, fSg, Mu
	6	sl, bSh, Mu, S, St
	7	bsh > 50%, S, Mu, St
	8	Sh, cst
	9	S, fSg, Mu, bSh
	10	fSt, bSh, S, trace Mu
	11	S > 50%, St, bSh
	12	S > 75%, St, bSh

**SEDIMENT CHARACTERISTICS  
ALONG THE UKAEA PIPELINE,  
WORBARROW BAY, 1984**  
Data from UKAEA Winfrith

**FIGURE 39**



**BEACH:**- "THE ZONE OF UNCONSOLIDATED MATERIAL THAT EXTENDS LANDWARD FROM THE LOW WATER LINE TO THE PLACE WHERE THERE IS MARKED CHANGE IN MATERIAL OR PHYSIOGRAPHIC FORM OR TO THE LINE OF PERMANENT VEGETATION (USUALLY THE EFFECTIVE LIMIT OF STORM WAVES). THE SEAWARD LIMIT OF A BEACH ALSO INCLUDES FORESHORE AND BACKSHORE." SHORE PROTECTION MANUAL VOLUME 3, 1975.

"THE BEACH IS AN ACCUMULATION OF UNCONSOLIDATED SEDIMENT EXTENDING SHOREWARD FROM THE MEAN LOW TIDE LINE TO SOME PHYSIOGRAPHIC CHANGE SUCH AS A SEA CLIFF OR DUNE FIELD, OR TO THE POINT WHERE PERMANENT VEGETATION IS ESTABLISHED." KOMAR, 1976.

"A BEACH IS AN ACCUMULATION OF LOOSE MATERIAL AROUND THE LIMIT OF WAVE ACTION. IT MAY BE TAKEN TO EXTEND FROM THE EXTREME UPPER LIMIT OF WAVE ACTION TO THE ZONE WHERE THE WAVES APPROACHING FROM DEEP WATER FIRST CAUSE APPRECIABLE MOVEMENT OF THE BOTTOM OF WHICH IT IS COMPOSED." KING, 1972.

**BACKSHORE:**- "THE ZONE OF THE BEACH PROFILE EXTENDING LANDWARD FROM THE SLOPING FORESHORE TO THE POINT OF DEVELOPMENT OF VEGETATION OR CHANGE IN PHYSIOGRAPHY." KOMAR, 1976.

"THE ZONE ABOVE THE LIMIT OF THE SWASH OF NORMAL HIGH SPRING TIDE, THEREFORE, ONLY EXCEPTIONALLY UNDER THE DIRECT INFLUENCE OF WAVES." KING, 1972.

"THAT ZONE OF THE SHORE OR BEACH LYING BETWEEN THE FORESHORE AND THE COASTLINE AND ACTED UPON BY WAVES ONLY DURING SEVERE STORMS." SHORE PROTECTION MANUAL, VOLUME 3, 1975.

**FORESHORE:**- "THE SLOPING PORTION OF THE BEACH PROFILE LYING BETWEEN A BERM CREST AND THE LOW WATER MARK OF THE BACKRUSH OF THE WAVE SWASH AT LOW TIDE." KOMAR, 1976.

"...INCLUDES ALL THAT PART OF THE BEACH WHICH IS REGULARLY COVERED AND UNCOVERED BY THE TIDE." KING, 1972.

"...THE PART OF THE SHORE LYING BETWEEN THE CREST OF THE SEAWARD BERM (OR UPPER LIMIT OF WAVE WASH AT HIGH TIDE) AND THE ORDINARY LOW WATER MARK THAT IS ORDINARILY TRAVERSED BY THE UPRUSH AND BACKRUSH OF THE WAVES AS THE TIDES RISE AND FALL." SHORE PROTECTION MANUAL, VOLUME 3, 1975.

**INSHORE:**- "THE ZONE OF THE BEACH PROFILE EXTENDING SEAWARD FROM THE FORESHORE JUST BEYOND THE BREAKER ZONE." KOMAR, 1976.

"THE ZONE OF VARIABLE WIDTH EXTENDING FROM THE LOW WATER LINE THROUGH THE BREAKER ZONE." SHORE PROTECTION MANUAL, VOLUME 3, 1975.

**BERM:**- "A NEARLY HORIZONTAL PORTION OF THE BEACH OR BACKSHORE FORMED BY THE DEPOSITION OF SEDIMENT BY THE RECEDING WAVES, (SOME BEACHES HAVE MORE THAN ONE BERM)." SHORE PROTECTION MANUAL, VOLUME 3, 1975;

**SWASH ZONE:**- "THE PORTION OF THE NEARSHORE REGION IN WHICH THE BEACH FACE IS ALTERNATELY COVERED BY THE UPRUSH OF THE WAVESWASH AND EXPOSED BY THE BACKWASH." KOMAR, 1976.

**TABLE 30 BEACH DEFINITIONS & NOMENCLATURE**

PHOTOGRAPHIC REDUCED TO ORIGINAL SIZE

PROFILE/LOUISIANA

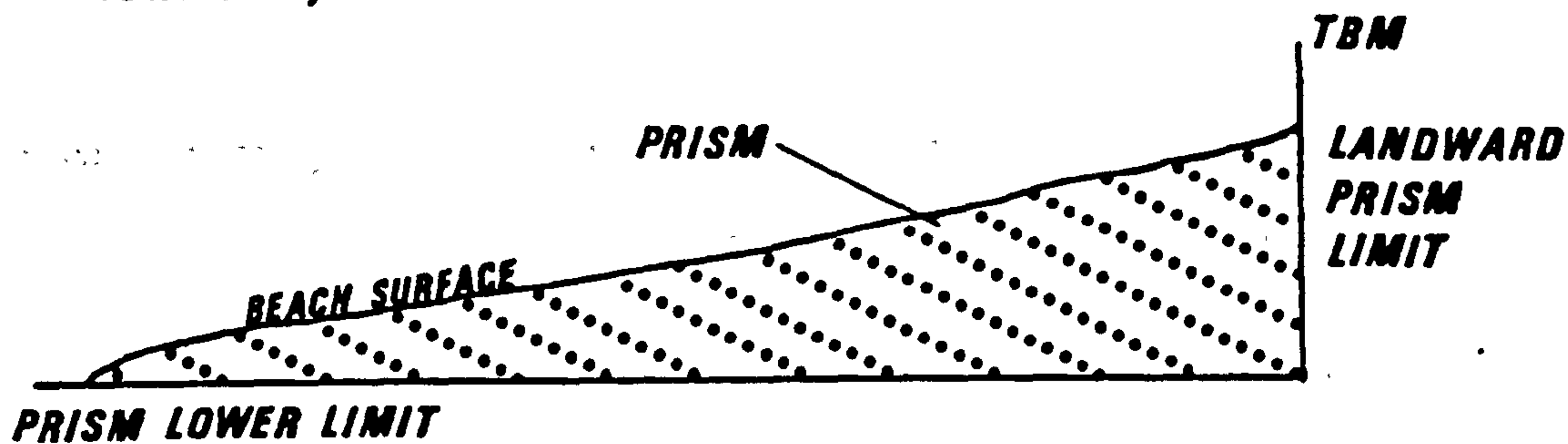


PLATE 36. ILLUSTRATING THE VERSATILITY OF THE SLOPE PANTOMETER, MAN O'WAR COVE.

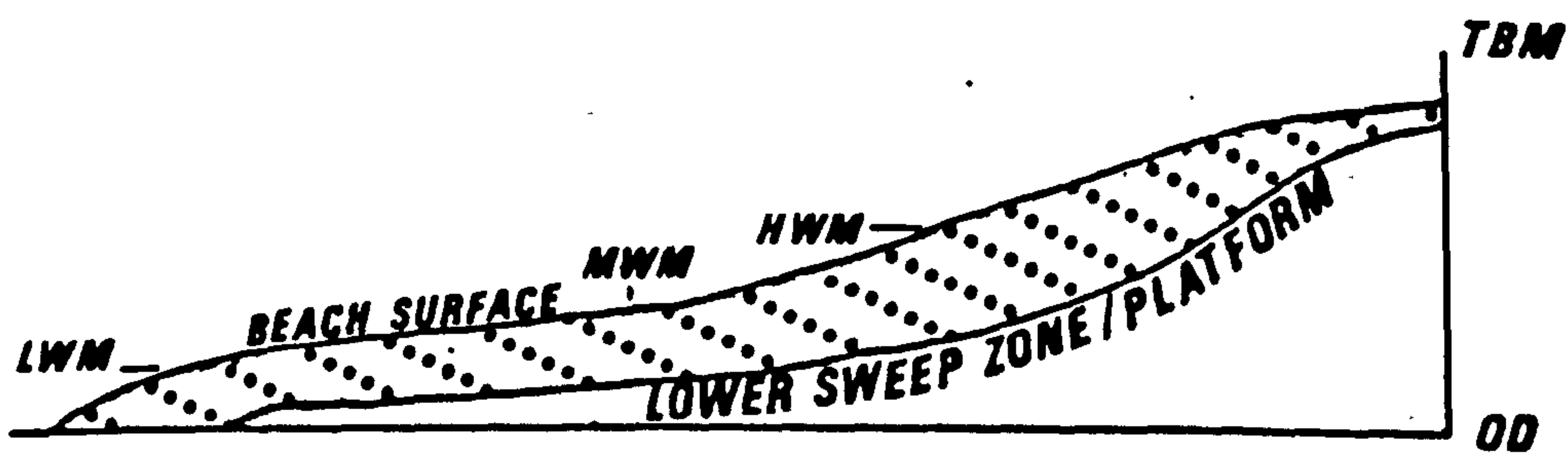
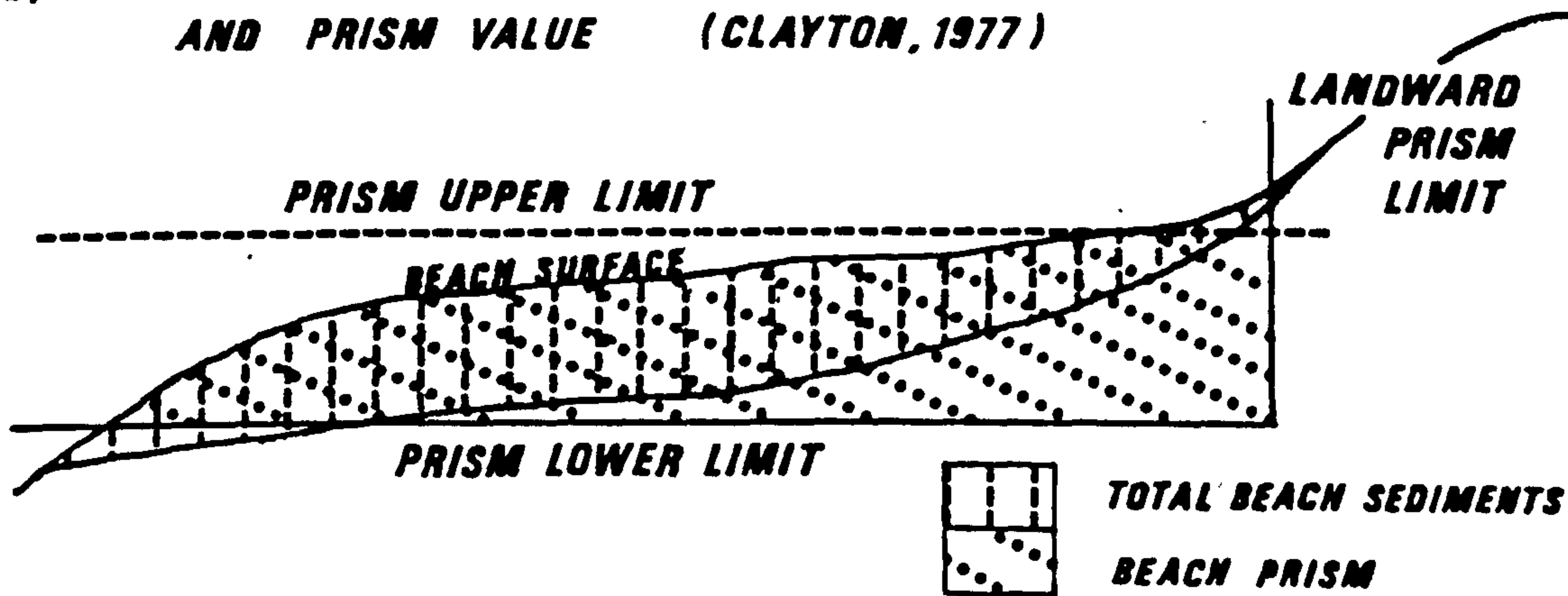
**TABLE 31****PROFILE SECTIONS REDUCED TO ORDNANCE DATUM**

BEACH	PROFILE/LOCATION	TEMP. BENCH MARK HEIGHT
RINGSTEAD	1	3.59m
	2	4.44m
	3	3.55m
	4	3.98m
	5	4.99m
	6	4.38m
DURDLE DOOR	1	4.71m
	2	6.00m
	3	3.87m
	4	5.56m
	5	4.54m
	6	3.89m
	7	4.34m
	8	3.33m
	9	3.38m
MAN O'WAR	1	3.05m
	2	4.66m
	3	3.10m
MUPE	1	3.30m
	2	3.51m
	3	3.80m
WORBARROW	1	4.04m
	2	4.77m
	3	5.45m
	4	4.97m

**(a) METHOD FOR DEFINING BEACH PRISM FOR VOLUME CALCULATIONS (CLAYTON, 1977)**



**(b) DISTINCTION BETWEEN VOLUME OF BEACH SEDIMENTS AND PRISM VALUE (CLAYTON, 1977)**



**(c) METHOD USED FOR CALCULATION OF DORSET BEACH PROFILES**

**FIGURE 40 VOLUME CALCULATIONS USING BEACH PRISMS**

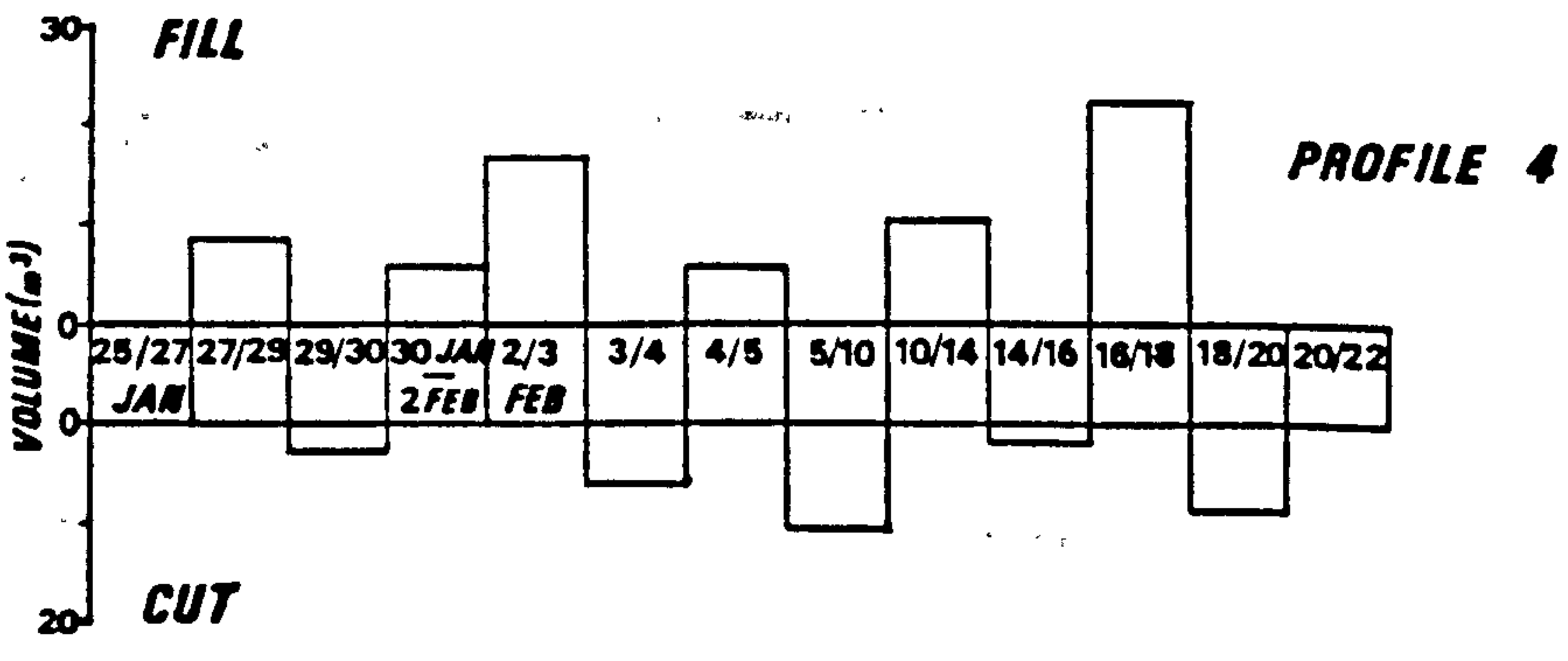
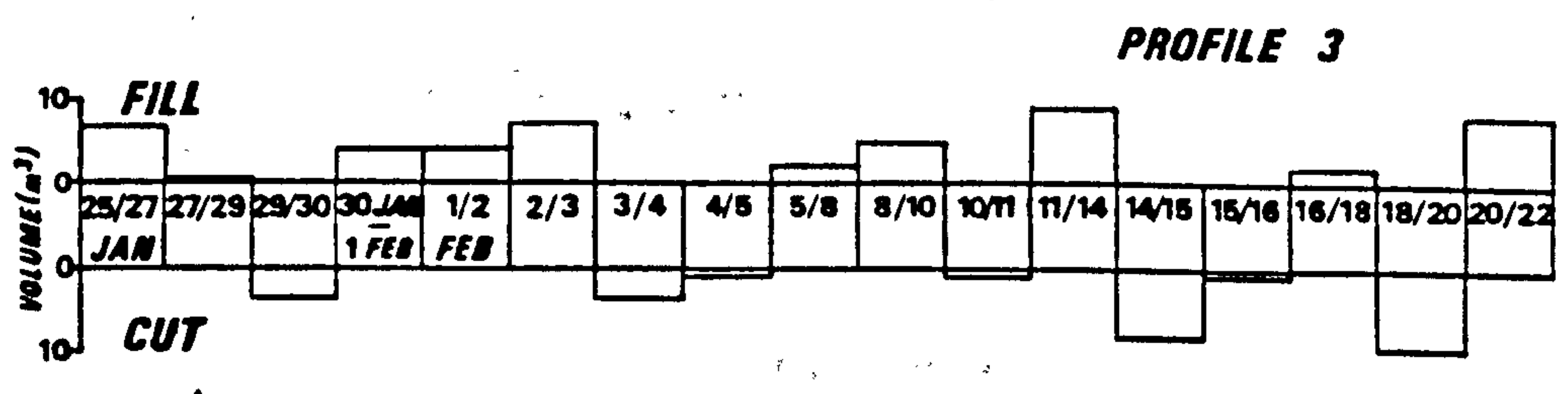
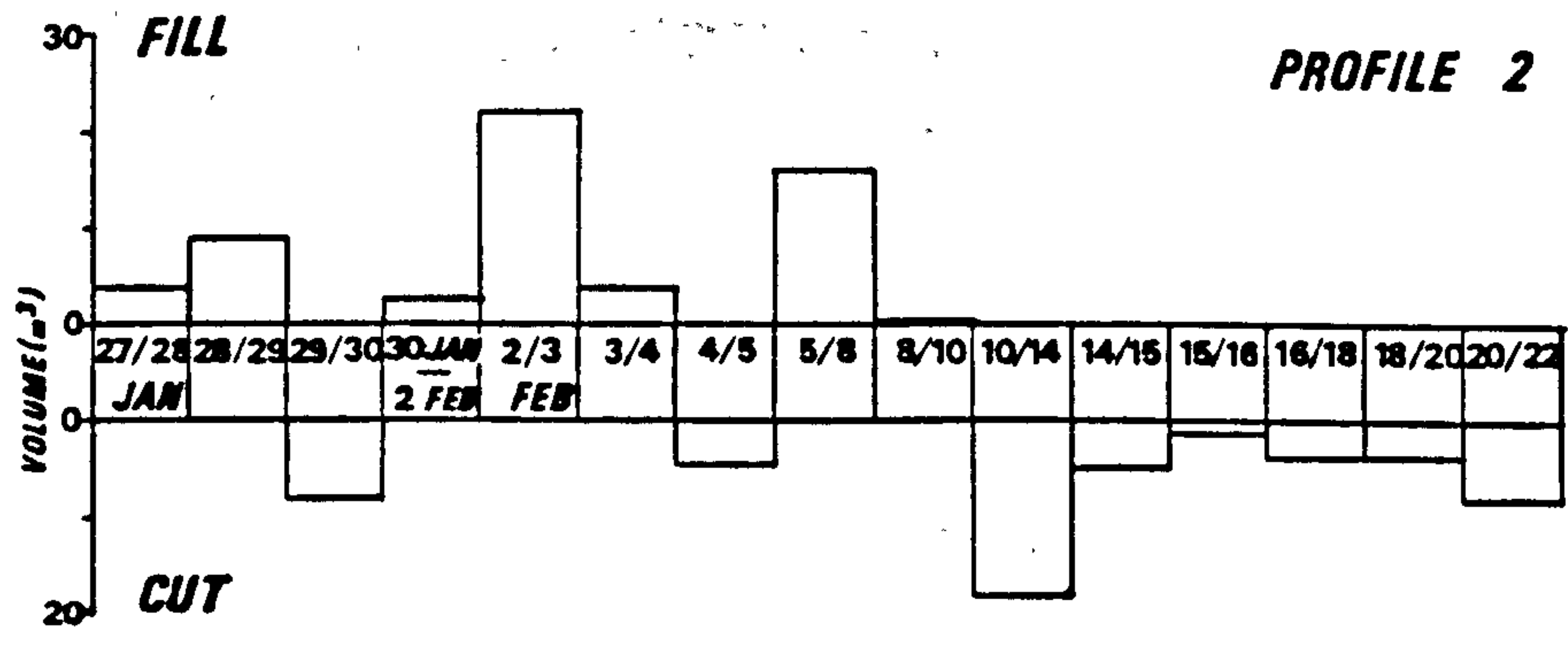
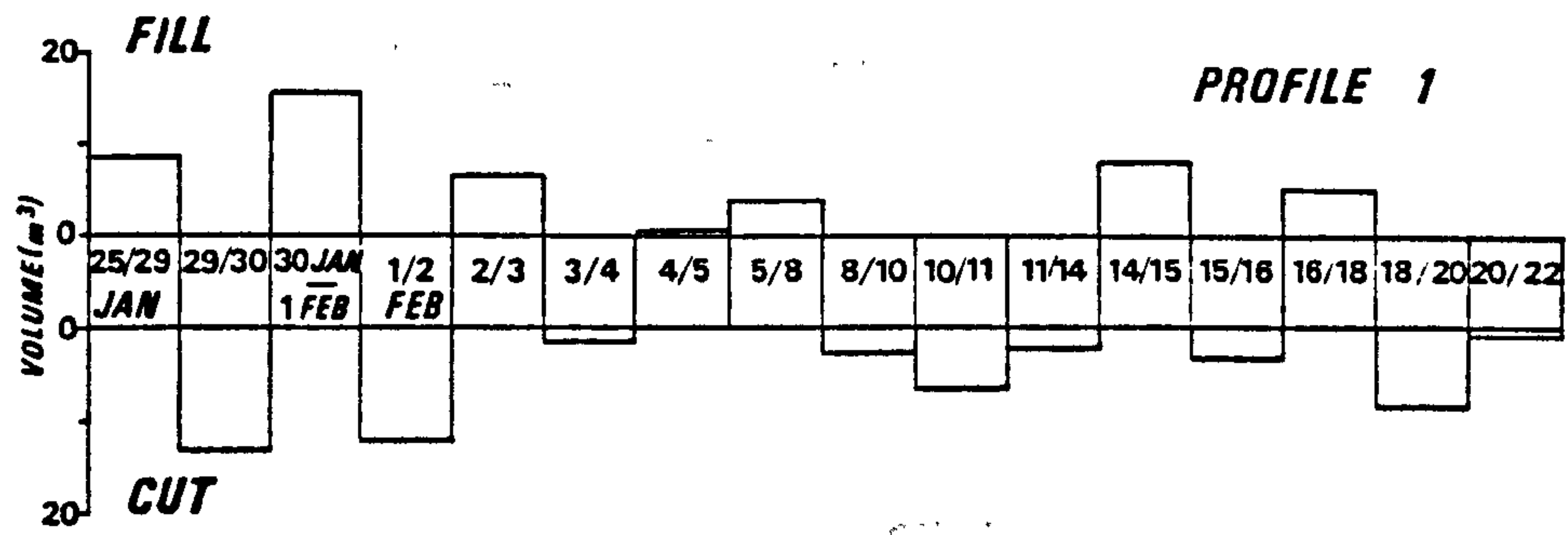
TABLE 32.

PROFILE CLASSIFICATION BY MACROFORM.

(MODIFIED CALDWELL, 1983).

MACROFORM	SUBDIVISIONS	ABBREVIATION
CONCAVE	NO BERM	CCNB
	UPPER BERM	CCUB
	MID WATER BERM	CCMB
	LOW WATER BERM	CCLB
LINEAR	NO BERM	LNB
	UPPER BERM	LUB
	MID WATER BERM	LMB
	LOW WATER BERM	LLB
CONVEX	NO BERM	CXNB
	UPPER BERM	CXUB
	MID WATER BERM	CXMB
	LOW WATER BERM	CXLB

NOTE: All subdivisions may include COMPOSITE UPPER BERMS, CUB (the amalgamation of recent high water berms in connection with a falling tide).  
 REMNANT UPPER BERMS, (RUB) indicate those berms that are a product of severe storm activity or an exceptionally high tide.  
 Beach sections may display a REMNANT UPPER BERM and COMPOSITE UPPER BERMS simultaneously; sections may also display more than one foreshore berm at any one time.  
 e.g. LRUBCUBLB = Linear macroform with remnant upper berm, composite upper berm and low water berm.



**TABLE 33 VOLUMETRIC CHANGE BETWEEN SELECTED SURVEY DATES DURDLE DOOR ONE MONTH SURVEY JANUARY - FEBRUARY 1983**

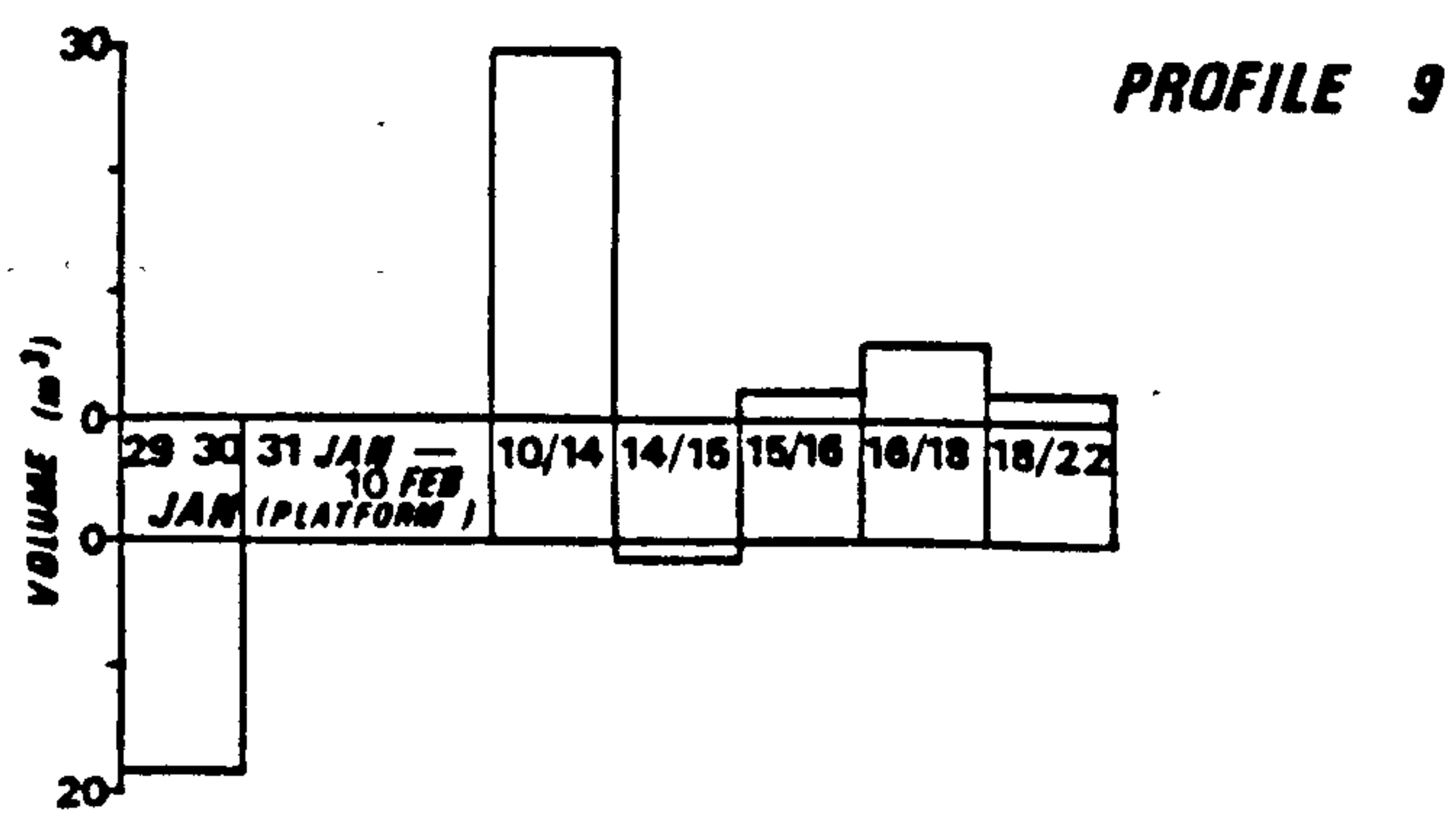
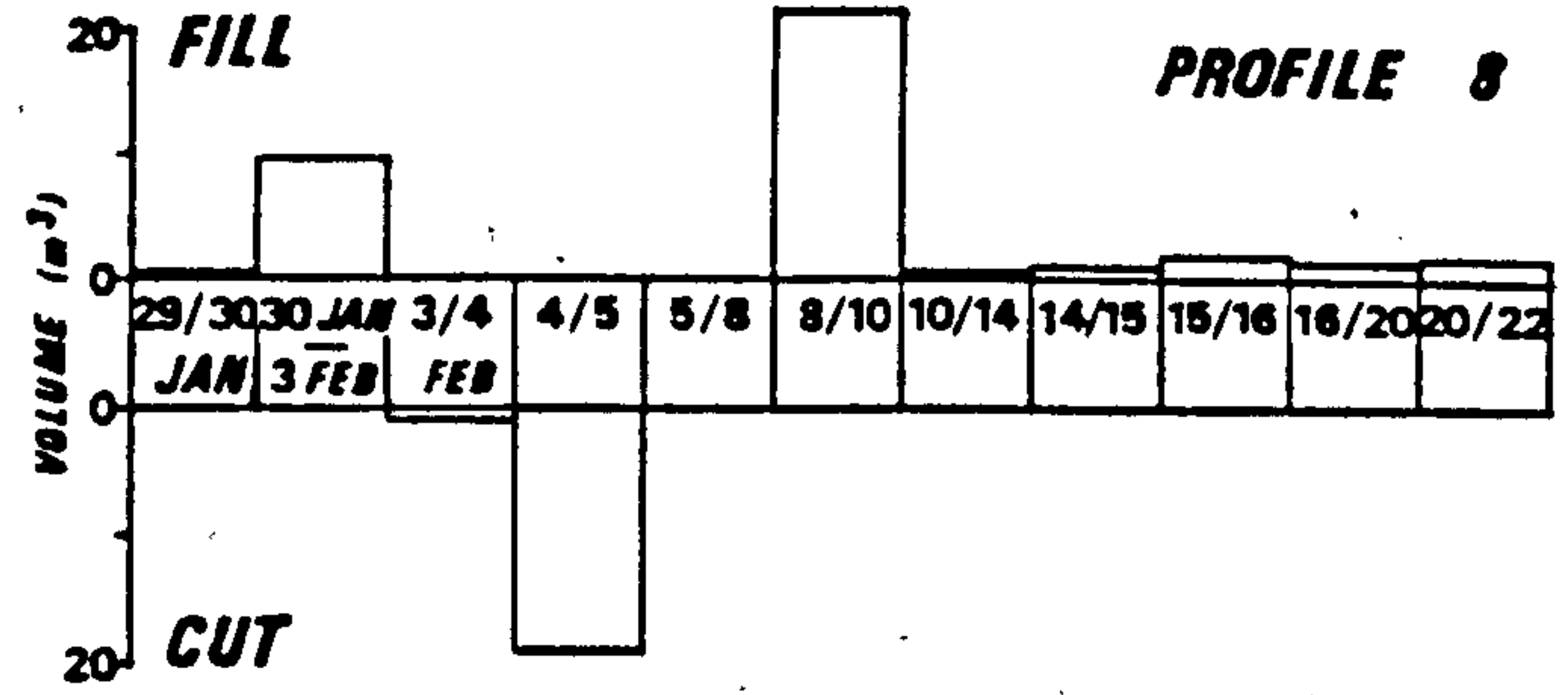
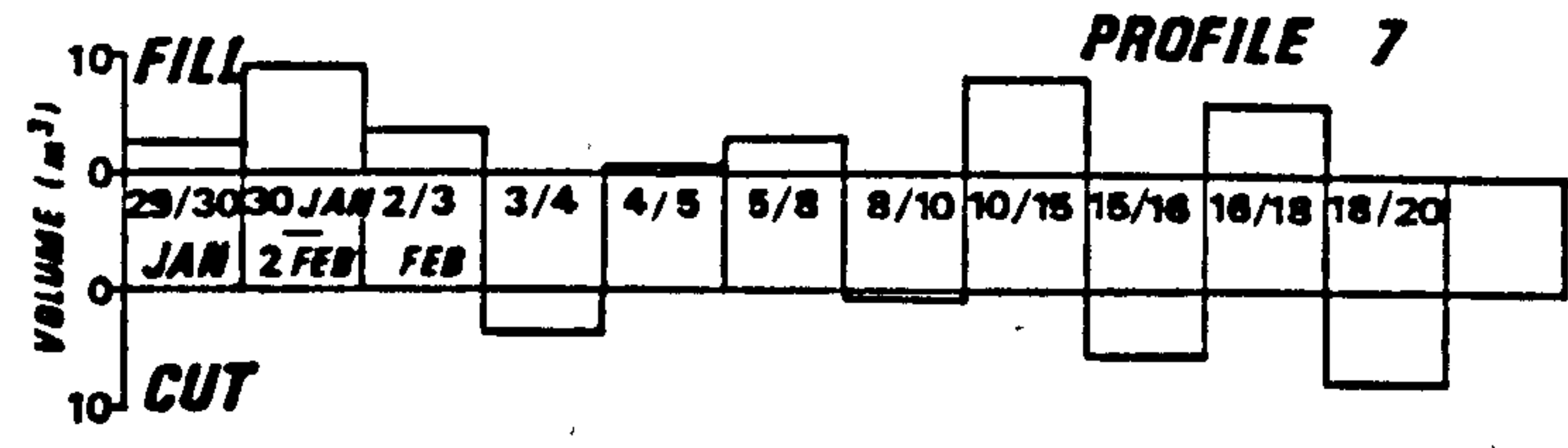
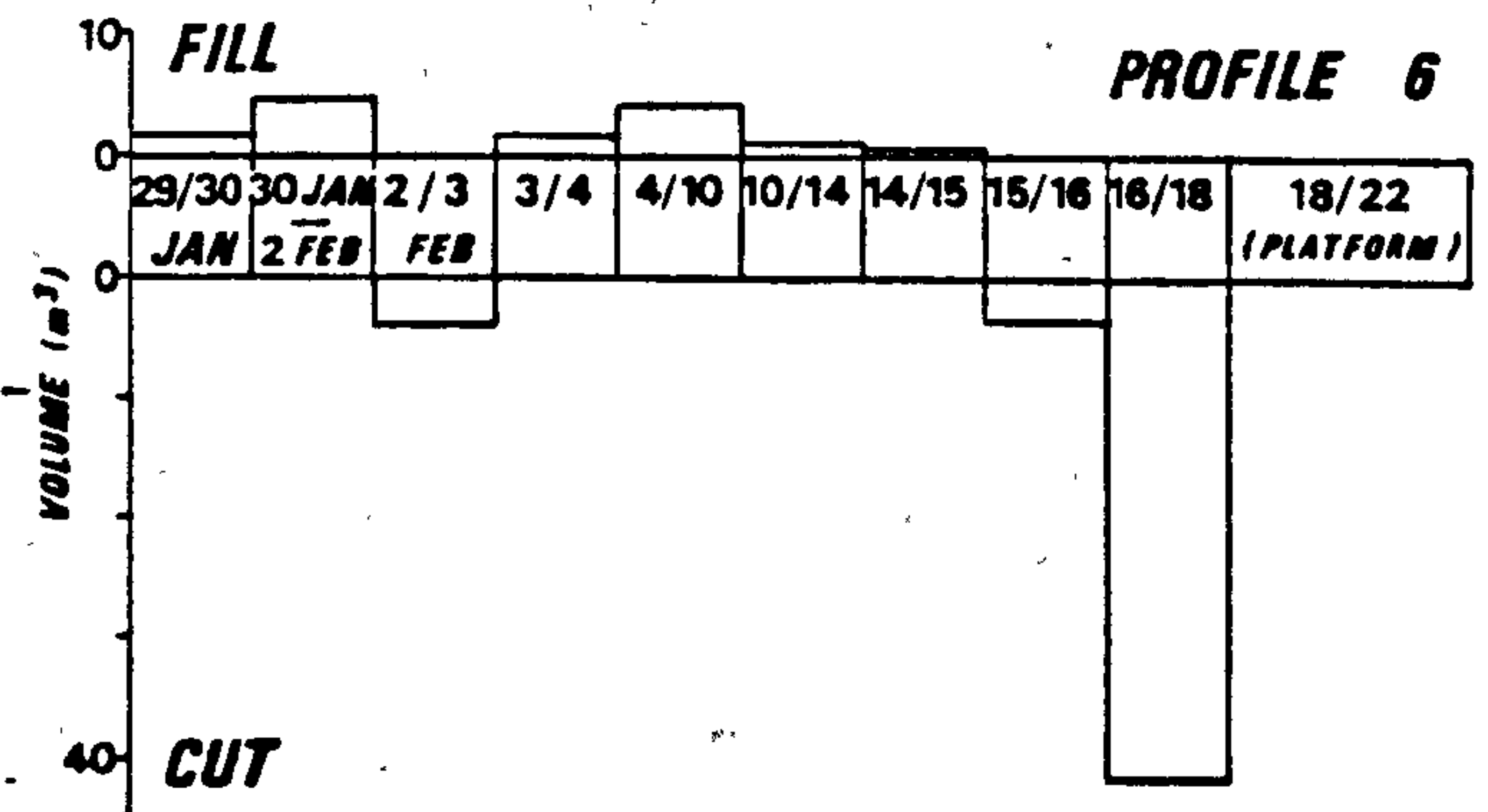
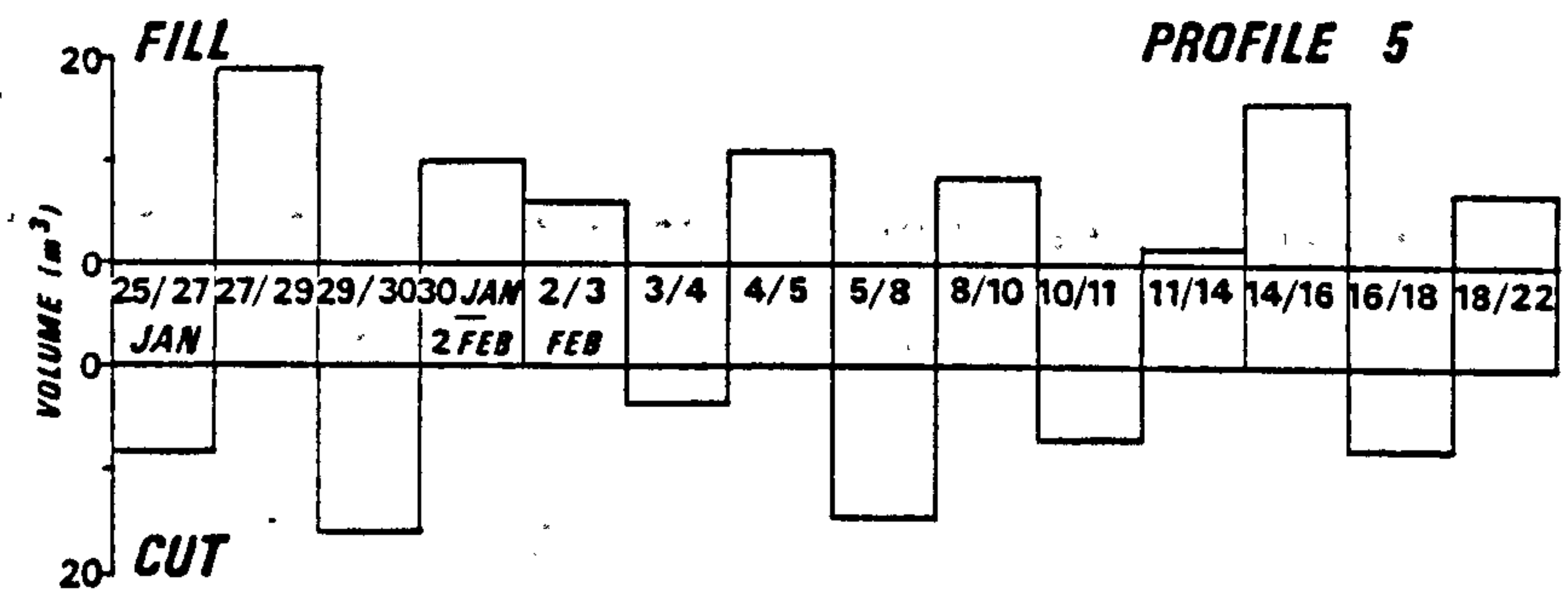


TABLE 33 continued



TABLE 34

DURDLE DOOR ONE MONTH SURVEY, JANUARY/FEBRUARY 1983.

PROFILE CLASSIFICATION BY MACROFORM, (selected dates).

DATE	PROFILE LOCATION								
	1	2	3	4	5	6	7	8	9
25.01.83	L CRUB UB	CXNB	LNB	LNB	LNB	-	-	-	-
27.01.83	L CRUB UBLB		CXNB	-	LNB	-	-	-	-
28.01.83	-	CXNB	-	-	-	-	-	-	-
29.01.83	L CRUB UBLB	CXUB	LNB	LNB	LNB	LNB	LNB	LNB	LNB
30.01.83	LNB	CXNB	CCNB	LNB	CXNB	LNB	LNB	LNB	LNB
01.02.83	LUB	-	CCNB	-	-	-	-	-	-
02.02.83	LUB	CXUB	CCMB	LNB	LNB	LNB	LNB	-	P.
03.02.83	LUB MB	CXUB	LNB	LNB	LNB	LNB	LMB	LUB	P.
04.02.83	LUB MB	CXUB	LMB	LNB	LNB	LNB	LNB	LNB	P.
05.02.83	LRUB UBMB	CXUB	LMB	LNB	CXNB	LNB	LNB	P.	P.
08.02.83	LRUB UBMB	CXUB	LMB	-	LNB	LNB	LNB	P.	P.
10.02.83	LRUB UB	CXUB MB	LUB MB	LMB	CXNB	LNB	CCMB	LNB	P.
11.02.83	LRUB UB	-	LUB	-	LMB	-	-	-	-
14.02.83	LRUB UB	CXUB	CXNB	LNB	LMB	LNB	-	LUB	LNB
15.02.83	LUB MB	CXUB	LNB	-	-	LNB	LNB	LUB	-
16.02.83	LUB MB	CXUB	LNB	LNB	CXNB	LNB	LNB	LUB	LNB
18.02.83	LUB MB	CXUB	CXNB	LNB	LNB	LNB	CXNB	LUB	LNB
20.02.83	LUB MB	CXUB MB	LNB	LNB	LNB	P.	LNB	LUB	CXNB
22.02.83	LUB MB	CXUB	CXUB	-	-	P.	-	LNB	-

TABLE 35.

DURDLE DOOR ONE MONTH SURVEY, JANUARY/FEBRUARY 1983.

1. BRUUN INDEX (selected dates).

DATE	PROFILE LOCATION								
	1	2	3	4	5	6	7	8	9
25.01.83	0.04	0.01	0.02	0.01	0.08	-	-	-	-
27.01.83	0.04	-	0.03	-	0.07	-	-	-	-
28.01.83	-	0.21	-	-	-	-	-	-	-
29.01.83	0.05	0.02	0.03	0.01	0.07	0.05	0.03	0.09	0.05
30.01.83	0.02	0.01	0.02	0.01	0.07	0.05	0.04	0.09	0.05
01.02.83	0.06	-	0.03	-	-	-	-	-	-
02.02.83	0.03	0.01	0.03	0.02	0.06	0.06	0.02	-	P.
03.02.83	0.05	0.03	0.05	0.02	0.07	0.05	0.06	0.17	P.
04.02.83	0.05	0.03	0.04	0.02	0.07	0.05	0.05	0.17	P.
05.02.83	0.05	0.03	0.04	0.02	0.08	0.05	0.05	P.	P.
08.02.83	0.06	0.03	0.05	-	0.07	0.05	0.05	P.	P.
10.02.83	0.05	0.04	0.05	0.02	0.07	0.05	0.05	0.10	P.
11.02.83	0.03	-	0.04	-	0.06	-	-	-	-
14.02.83	0.03	0.03	0.06	0.02	0.07	0.05	-	0.10	0.07
15.02.83	0.05	0.02	0.05	-	-	0.06	0.07	0.10	0.10
16.02.83	0.04	0.02	0.05	0.02	0.08	0.05	0.06	0.08	0.11
18.02.83	0.05	0.02	0.05	0.03	0.07	P.	0.07	0.08	0.10
20.02.83	0.03	0.02	0.04	0.02	0.06	P.	0.05	0.08	0.10
22.02.83	0.03	0.01	0.06		0.06	P.	-	0.09	-

TABLE 35 continued

## 2. MEAN DEPTH VALUES.

DATE	PROFILE LOCATION								
	1	2	3	4	5	6	7	8	9
25.01.83	0.45	0.13	0.17	0.31	1.06	-	-	-	-
27.01.83	0.44	-	0.41	-	0.83	-	-	-	-
28.01.83	-	0.21	-	-	-	-	-	-	-
29.01.83	0.72	0.37	0.40	0.45	1.19	0.58	0.30	0.72	0.92
30.01.83	0.26	0.22	0.27	0.43	0.88	0.57	0.41	0.68	0.92
01.02.83	0.80	-	0.39	-	-	-	-	-	-
02.02.83	0.41	0.27	0.48	0.49	1.01	0.72	0.26	-	P.
03.02.83	0.65	0.66	0.71	0.73	1.18	0.59	0.75	1.31	P.
04.02.83	0.60	0.75	0.60	0.64	1.08	0.62	0.64	1.26	P.
05.02.83	0.63	0.66	0.58	0.73	1.36	0.62	0.65	P.	P.
08.02.83	0.77	0.91	0.66	-	1.02	0.62	0.72	P.	P.
10.02.83	0.66	0.96	0.76	0.58	1.22	0.74	0.70	1.01	P.
11.02.83	0.44	-	0.66	-	1.02	-	-	-	-
14.02.83	0.35	0.67	0.98	0.76	1.06	0.77	-	1.02	1.03
15.02.83	0.63	0.57	0.73	-	-	0.82	0.99	1.08	1.18
16.02.83	0.53	0.54	0.68	0.69	1.44	0.70	0.79	0.98	1.32
18.02.83	0.73	0.47	0.75	0.95	1.21	P.	1.02	0.98	1.39
20.02.83	0.42	0.40	0.51	0.82	1.05	P.	0.75	1.04	1.46
22.02.83	0.39	0.23	0.81		1.05	P.	-	1.12	-

Data processed from daily  
meteorological records at HMS Osprey,  
Portland Naval Base

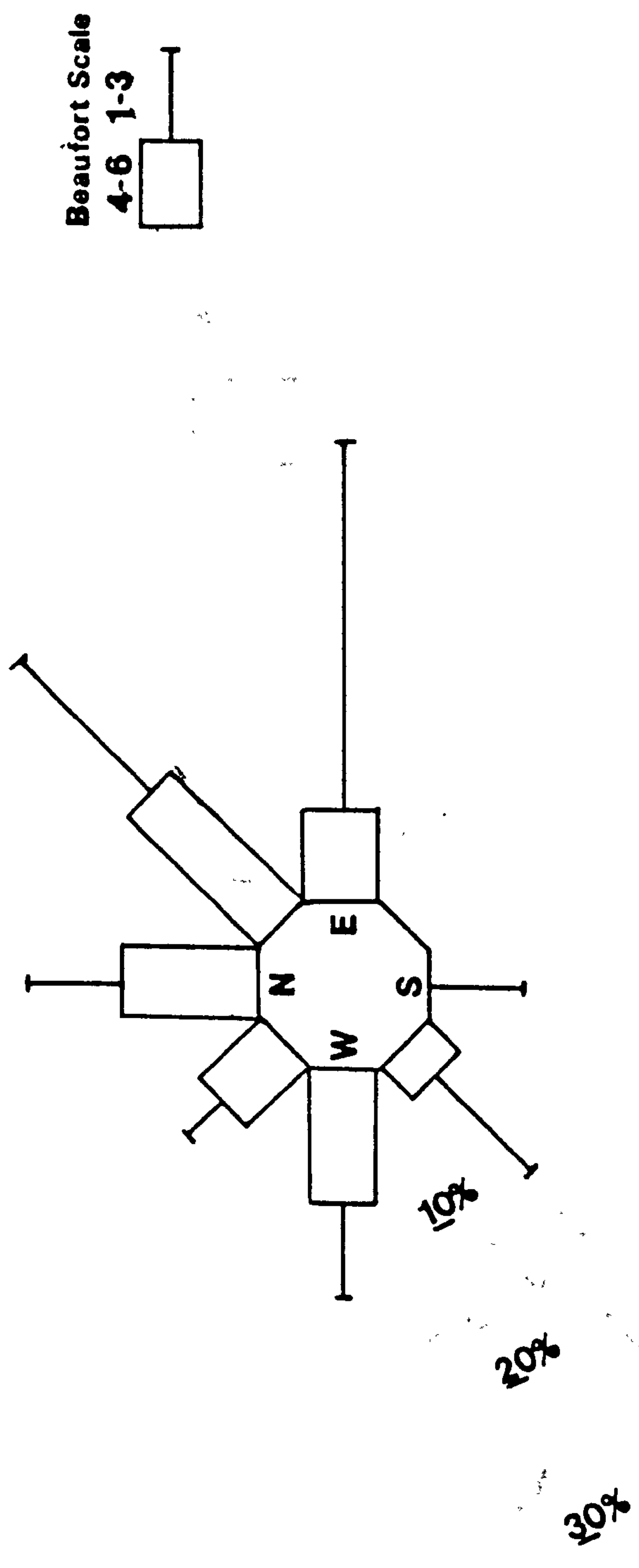


FIGURE 41 WIND ROSE JANUARY 25 - MARCH 1 1983

Data processed from daily  
meteorological records at  
HMS Osprey, Portland Naval Base

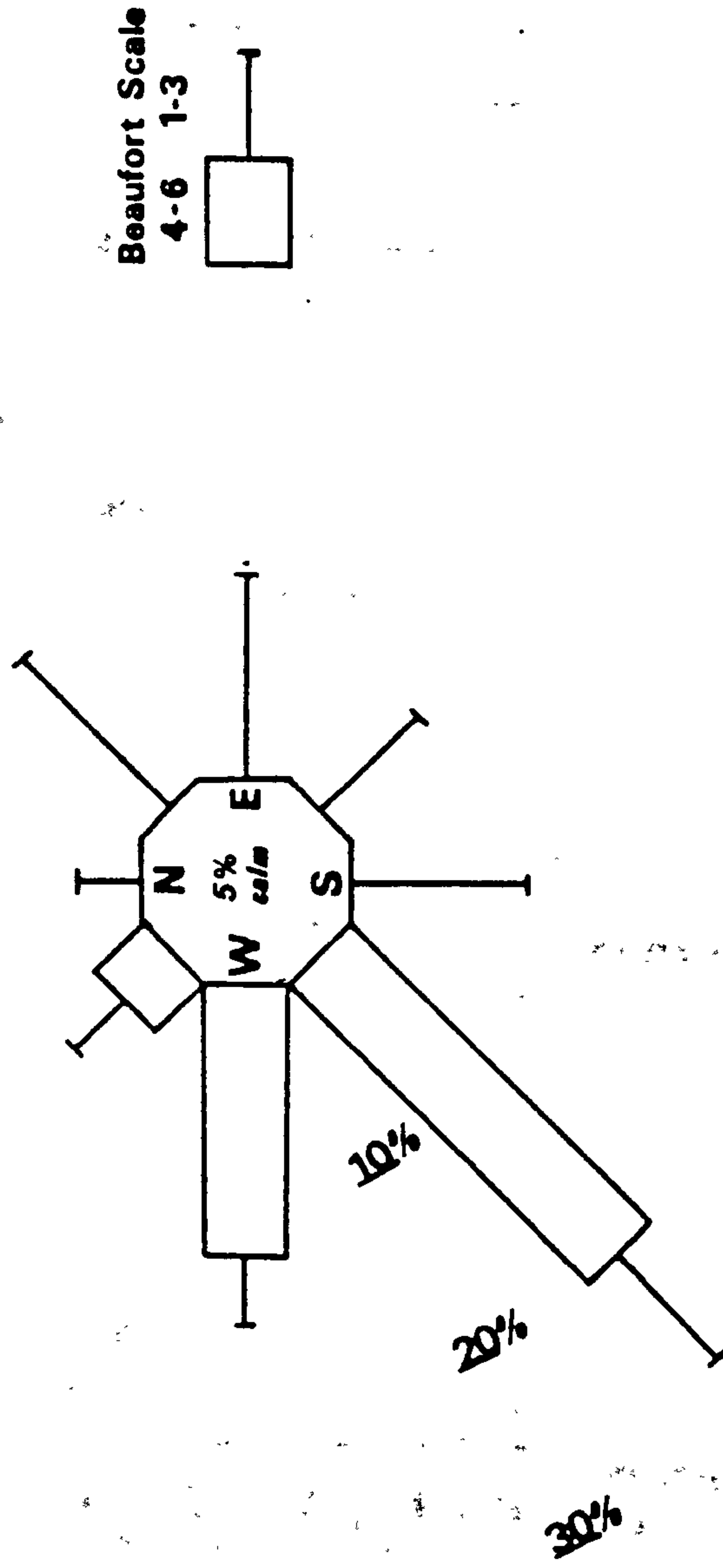
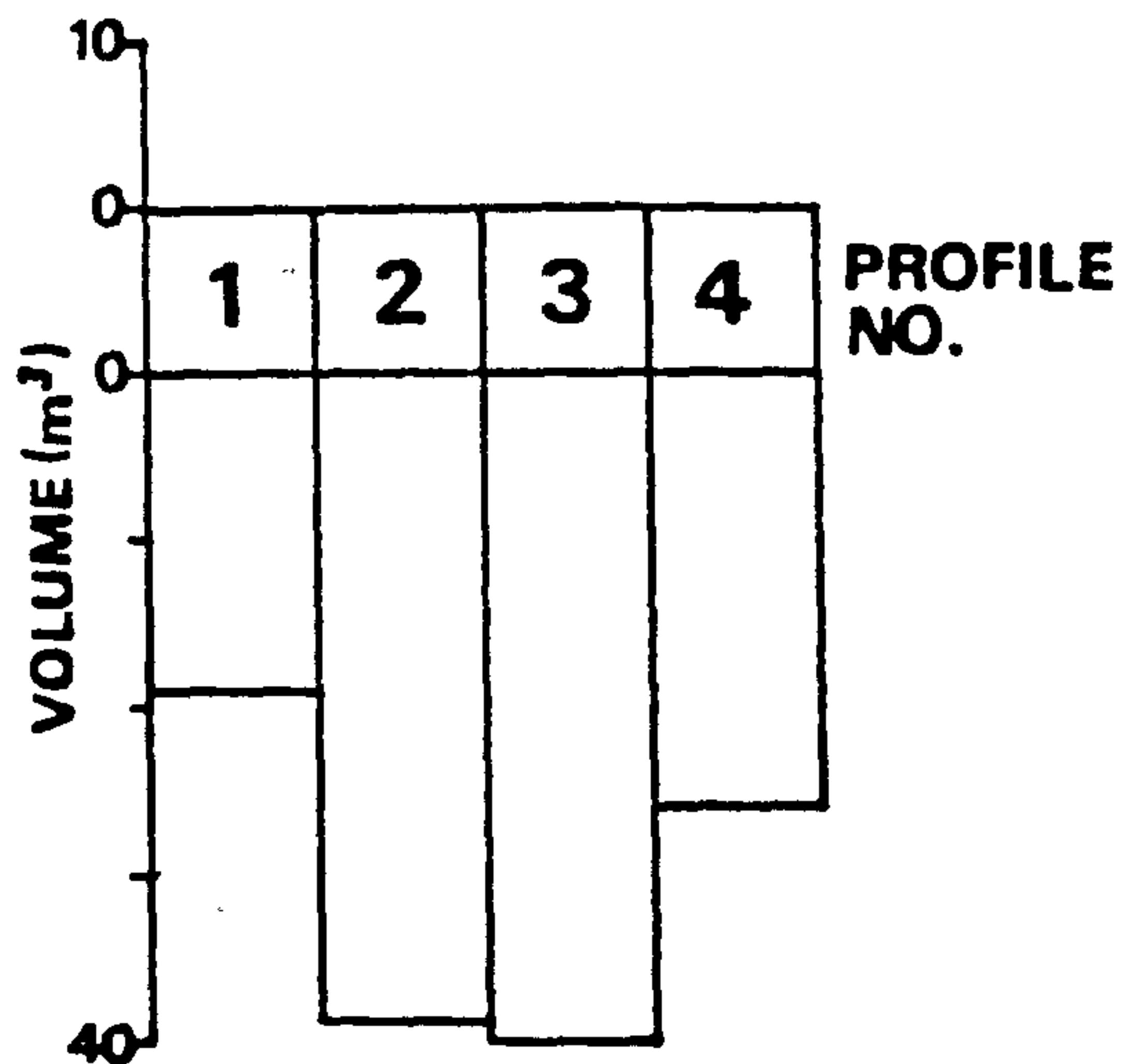
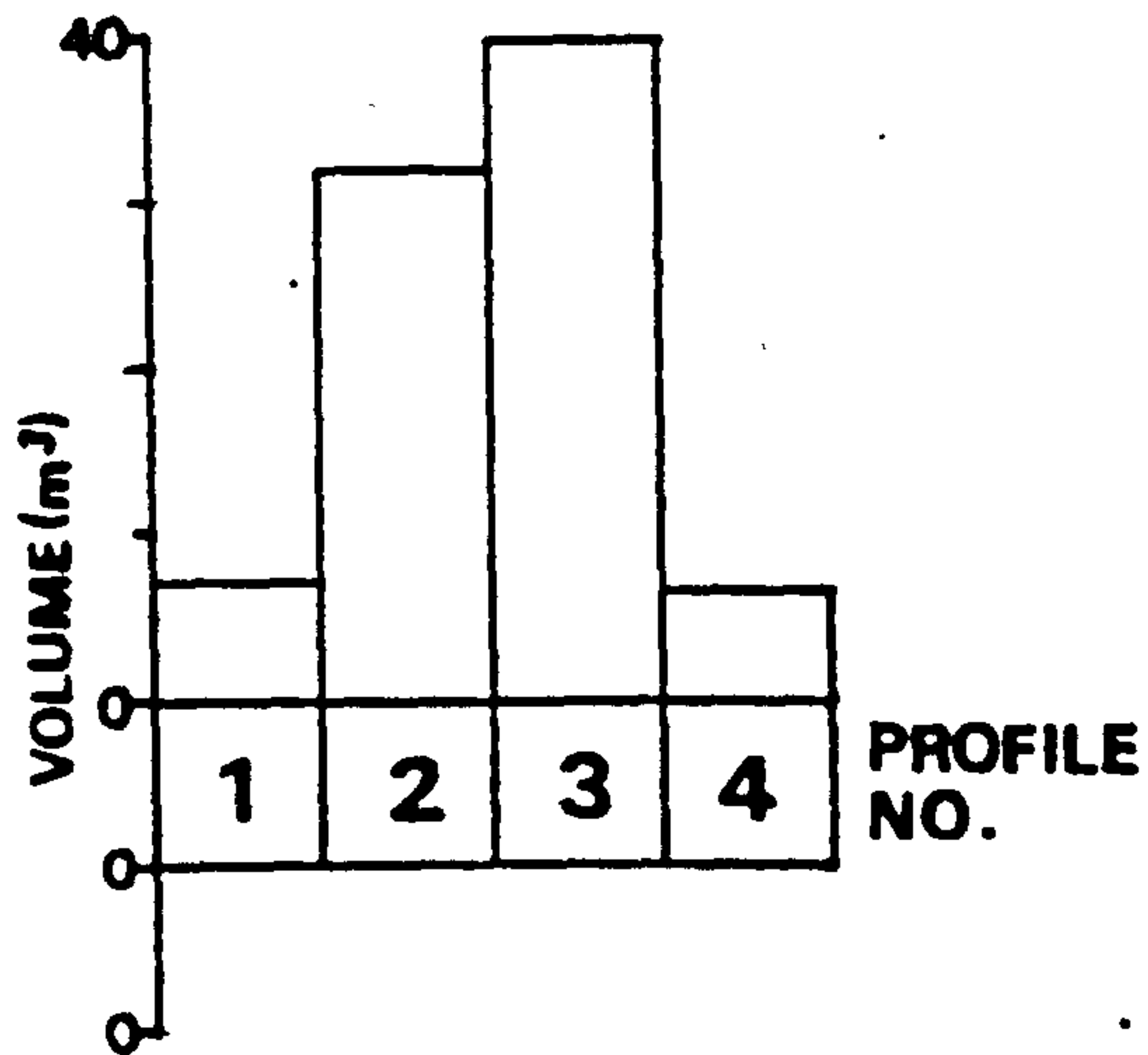


FIGURE 42 WIND ROSE SEPTEMBER 1983

1/5.9.83



5/18.9.83



18/25.9.83

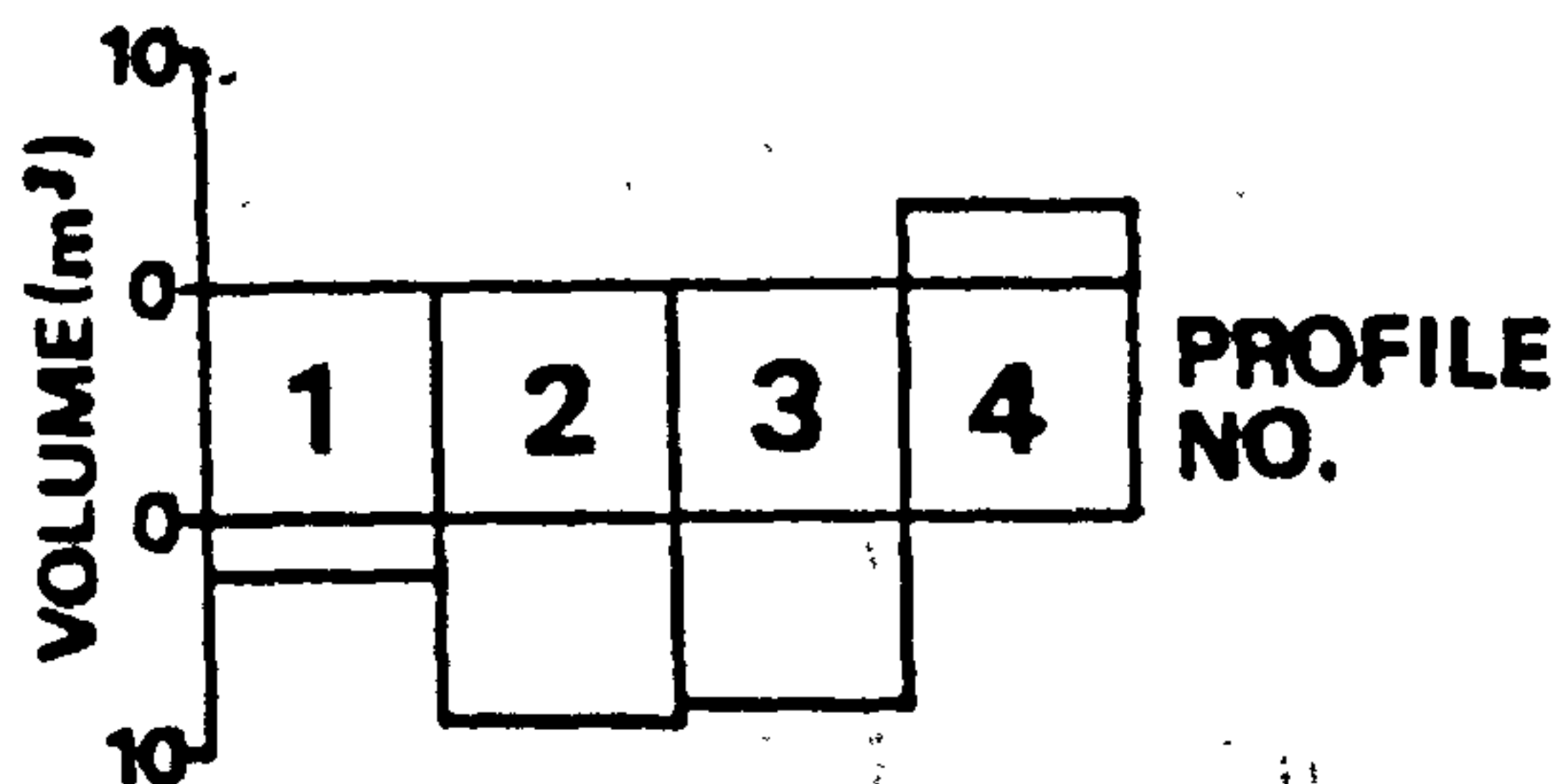


TABLE 36

VOLUMETRIC CHANGE  
WORBARROW BEACH  
STORM EVENT SURVEY SEPTEMBER 1983

**TABLE 37**

**WORBARROW STORM EVENT SURVEY SEPTEMBER 1983.**

**1. BRUUN INDEX.**

DATE	PROFILE LOCATION			
	1	2	3	4
01.09.83	0.03	0.07	0.08	0.03
18.09.83	0.02	0.07	0.07	0.01
25.09.83	0.01	0.05	0.06	0.01

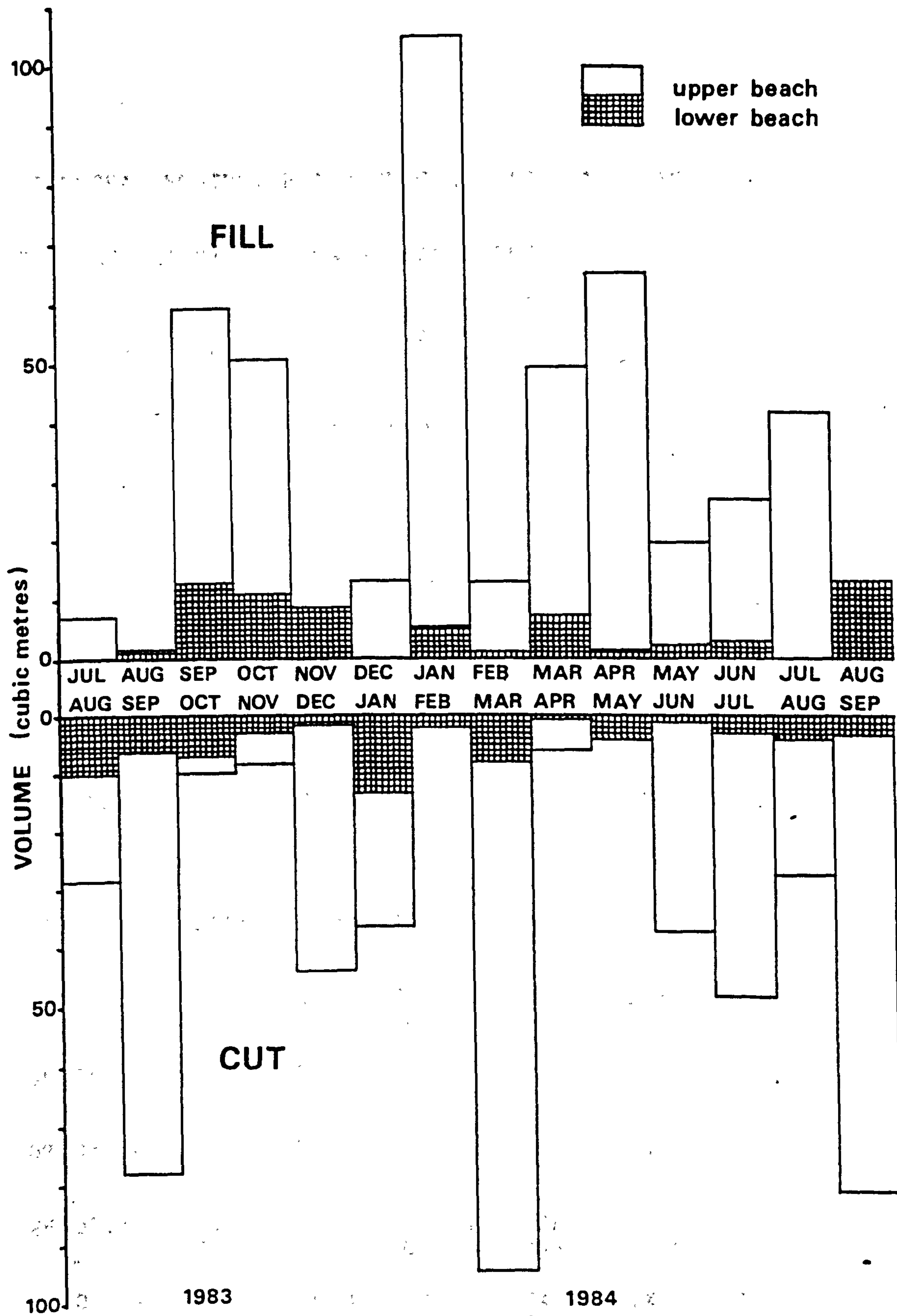
**2. MEAN DEPTH.**

DATE	PROFILE LOCATION			
	1	2	3	4
01.09.83	0.58	1.09	1.28	0.79
18.09.83	0.24	1.04	1.16	0.15
25.09.83	0.19	0.74	0.96	0.25

**TABLE 38**

**PROFILE CLASSIFICATION BY MACROFORM.**

DATE	PROFILE LOCATION			
	1	2	3	4
01.09.83	LNB	LCUB RUB	CCCUB CUB RUB	LCUB RUB
05.09.83	CCNB	CCRUB	CCRUB	LNB
18.09.83	LUB	LCUB RUB	CCCUB RUB	CCNB
25.09.83	LUB	LCUB RUB	CCCUB RUB	CCUB



**TABLE 39 VOLUMETRIC CHANGES BETWEEN MONTHLY SURVEYS**  
**RINGSTEAD BEACH**



TABLE 40

RINGSTEAD MONTHLY BEACH PROFILE DATA (1983/1984)

PROFILE CLASSIFICATION BY MACROFORM.

DATE	PROFILE LOCATION					
	1	2	3	4	5	6
11.07.83	CXUB	CXUB RCUB	CC CUB	LUB RUB	LCUB	LUB RUB
17.08.83	LUB RUB	CXUB RCUB	LUB RUB	LUB RCUB	LUB RCUB	LUB RCUB
01.09.83	LUB	LUB	LNB	LUB	LUB	CCUB RUB
07.10.83	LCUB	LCUB	LNB	LUB	LUB LB	CC CUB
06.11.83	LUB RUB	LCUB	CXUB RUB	LUB	LUB RCUB	LUB RCUB
07.12.83	CCUB	LNB	CXNB	CCNB	LUB RUB	LUB
19.01.84	LCUB	LUB	CCMB	CCUB	LUB	CCUB
17.02.83	CX RUB	LCUB	LUB	LNB	LUB	CX RCUB
21.03.84	CCUB	CXUB LB	LUB	CCUB	LCUB	CCUB RUB
13.04.84	LUB RUB	LCUB	LUB RUB	CCUB	LUB RUB	CCUB RUB
08.05.84	LMB UB	CX CUB	LCUB	LUB	LUB RUB	LUB
07.06.84	CXUB RUB	LCUB	LCUB	LUB	LRUB	LUB
25.07.84	CCMB CUB	LCUB	CXCUB LB	LUB RUB	LUB RCUB	LUB
08.08.84	LUBMB RUB	LCUB MB	LUB RUB	CXUB RUB	CXCUB RUB	CXCUB
25.09.84	CXLB UB	LCUB	LUB	CXUB	LCUB	LCUB

TABLE 41

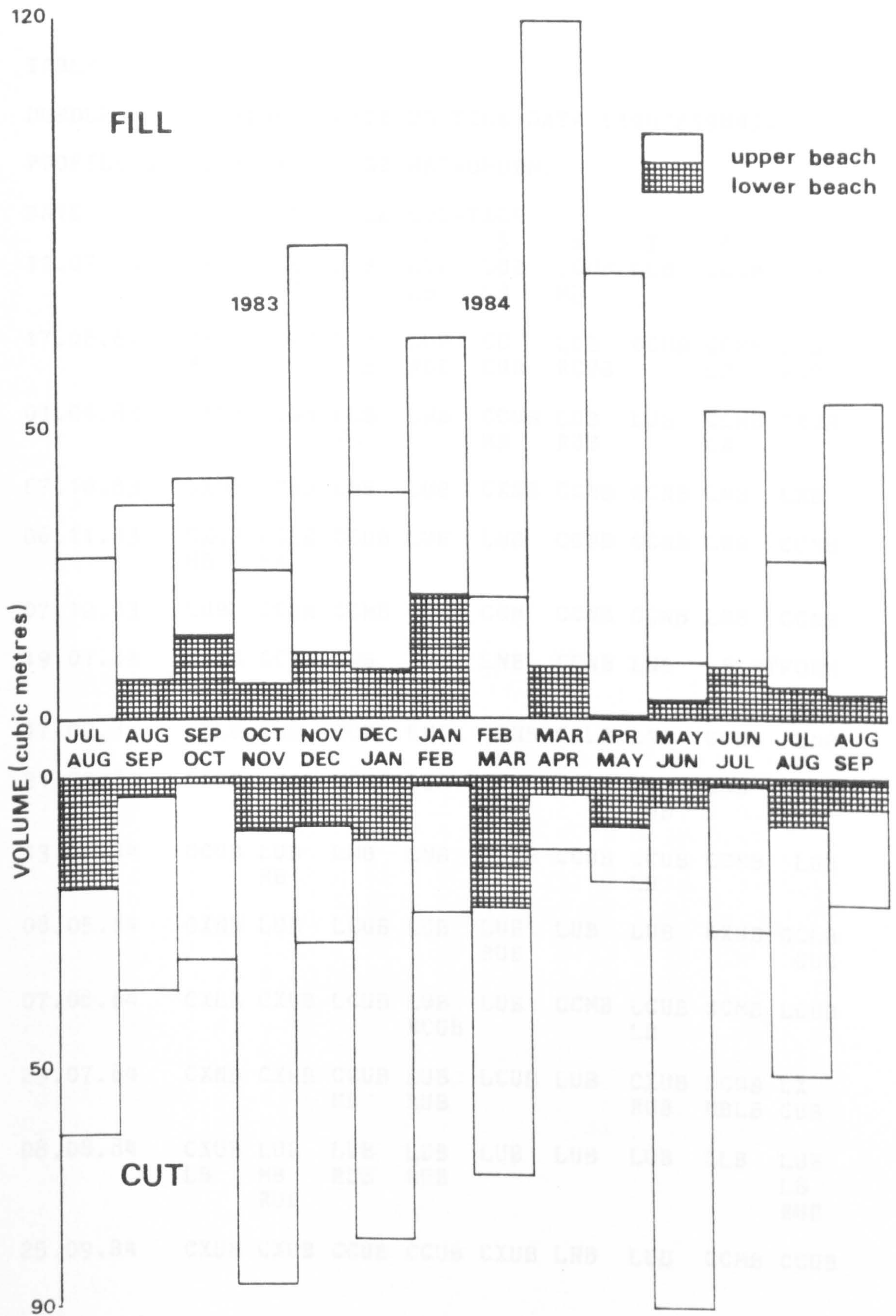
RINGSTEAD MONTHLY BEACH PROFILE DATA (1983/1984)

1. BRUUN INDEX VALUES.

DATE	PROFILE LOCATION					
	1	2	3	4	5	6
11.07.8	0.04	0.05	0.01	0.03	0.04	0.06
17.08.83	0.01	0.09	0.04	0.06	0.04	0.05
01.09.83	0.01	0.03	0.03	0.01	0.01	0.02
07.10.83	0.04	0.03	0.01	0.02	0.03	0.05
06.11.83	0.03	0.03	0.07	0.03	0.04	0.05
07.12.83	0.03	0.02	0.04	0.01	0.03	0.04
19.01.84	0.04	0.02	0.03	0.01	0.02	0.04
17.02.84	0.08	0.03	0.06	0.03	0.03	0.05
21.03.84	0.03	0.03	0.05	0.04	0.02	0.04
13.04.84	0.04	0.05	0.07	0.04	0.02	0.03
08.05.84	0.04	0.09	0.07	0.05	0.03	0.04
07.06.84	0.06	0.06	0.06	0.05	0.03	0.04
25.07.84	0.04	0.05	0.09	0.05	0.02	0.06
08.08.84	0.06	0.04	0.06	0.06	0.05	0.06
25.09.84	0.05	0.02	0.05	0.06	0.02	0.03

2. MEAN DEPTH VALUES.

DATE	PROFILE LOCATION					
	1	2	3	4	5	6
11.07.83	0.58	0.75	0.59	0.91	0.78	0.88
17.08.83	0.17	0.99	0.46	0.80	0.76	0.75
01.09.83	0.09	0.41	0.35	0.21	0.07	0.26
07.10.83	0.53	0.42	1.00	0.36	0.66	0.73
06.11.83	0.40	0.46	1.06	0.55	0.83	0.73
07.12.83	0.34	0.33	0.50	0.23	0.71	0.68
19.01.84	0.69	0.27	0.46	0.06	0.39	0.49
17.02.84	1.53	0.54	0.98	0.55	0.67	0.59
21.03.84	0.36	0.45	0.53	0.80	0.50	0.47
13.04.84	0.68	0.92	0.92	0.69	0.49	0.41
08.05.84	0.68	1.37	1.26	1.07	0.63	0.63
07.06.84	0.91	1.03	0.96	0.93	0.81	0.57
25.07.84	0.74	0.79	1.32	1.04	0.49	0.95
08.08.84	1.04	0.67	0.94	1.17	1.06	0.81
25.09.84	0.78	0.37	0.83	1.01	0.54	0.38



**TABLE 42**  
**VOLUMETRIC CHANGES BETWEEN MONTHLY SURVEYS**  
**DURDLE DOOR BEACH**

TABLE 43

DURDLE DOOR MONTHLY BEACH PROFILE DATA (1983/1984).

PROFILE CLASSIFICATION BY MACROFORM.

DATE	PROFILE LOCATION								
	1	2	3	4	5	6	7	8	9
11.07.83	CXUB	LUB RUB	LUB LB	LUB LB	LUB LB	CCUB MB	LUB	CCUB	LUB
17.08.84	CXUB MB	CXUB	LUB RUB	LUB RUB	CC CUB	LUB RCUB	CCUB	CCMB LB	LUB RUB
01.09.83	CXUB	CCUB	LUB MB	LUB	CCUB MB	LUB RUB	LUB	CCMB LB	CXUB
07.10.83	CXMB	CCUB	LNB	LUB	CXNB	CCNB	CCNB	LNB	LNB
06.11.83	CXUB MB	CCLB MB	CCUB	LUB	LNB	CCNB	CCNB	LNB	CCNB
07.12.83	LUB	CCUB	CCMB	CCNB	CCN	CCNB	CCNB	LNB	CCNB
19.01.84	CXLB CUB	CCMB	LNB	LLB	LNB	CCNB	LNB	PLATFORM	
17.02.84	CXLB	LMB	CCNB	LNB	CCNB	CCLB	LNB	CCNB	LNB
21.03.84	CXNB	LUB	CCUB	LUB	CC CUB	CCUB	CC CUB	LNB	CCNB
13.04.84	CCUB	LUB MB	LMB	LNB	CXMB	CCUB	CCUB LB	CCMB	LUB
08.05.84	CXNB	LUB	LCUB	LUB	LUB RUB	LUB	LUB	CXUB	CCLB CUB
07.06.84	CXLB	CXUB	LCUB	LUB RCUB	LUB	CCMB	LCUB LB	CCMB	LCUB
25.07.84	CXNB	CXUB	CCUB MB	LUB RUB	LCUB	LUB	CXUB RUB	CCUB MBLB	CX CUB
08.08.84	CXUB LB	LUB MB RUB	LUB RUB	LUB RUB	LUB	LUB	LUB	LLB	LUB LB RUB
25.09.84	CXUB	CXUB	CCUB	CCUB	CXUB	LNB	LUB	CCMB	CCUB

TABLE 44

## DURDLE DOOR MONTHLY BEACH PROFILE DATA (1983/1984).

## 1. BRUUN INDEX VALUES.

DATE	PROFILE LOCATION								
	1	2	3	4	5	6	7	8	9
11.07.83	0.10	0.06	0.03	0.01	0.05	0.07	0.09	0.09	0.08
17.08.83	0.09	0.03	0.05	0.02	0.01	0.03	0.08	0.11	0.15
01.09.83	0.10	0.06	0.03	0.01	0.05	0.07	0.04	0.13	0.14
07.10.83	0.11	0.05	0.03	0.02	0.02	0.02	0.03	0.10	0.10
06.11.83	0.10	0.03	0.04	0.03	0.05	0.02	0.01	0.03	0.06
07.12.83	0.11	0.05	0.03	0.02	0.02	0.02	0.03	0.10	0.10
19.01.84	0.11	0.03	0.04	0.01	0.03	0.06	0.02	0.00	0.00
17.02.84	0.09	0.05	0.03	0.01	0.04	0.04	0.04	0.08	0.04
21.03.84	0.01	0.02	0.04	0.02	0.04	0.04	0.03	0.06	0.03
13.04.84	0.09	0.05	0.05	0.01	0.04	0.03	0.06	0.14	0.01
08.05.84	0.12	0.07	0.04	0.02	0.06	0.07	0.07	0.16	0.10
07.06.84	0.11	0.02	0.05	0.02	0.05	0.04	0.07	0.16	0.13
25.07.84	0.11	0.07	0.05	0.02	0.07	0.07	0.07	0.15	0.13
08.08.84	0.11	0.05	0.03	0.02	0.04	0.07	0.05	0.12	0.11
25.09.84	0.12	0.06	0.02	0.02	0.07	0.06	0.05	0.09	0.06

## 2. MEAN DEPTH VALUES.

DATE	PROFILE LOCATION								
	1	2	3	4	5	6	7	8	9
11.07.83	1.34	1.52	0.46	0.31	0.78	0.72	1.25	0.99	0.78
17.08.83	1.06	1.06	0.57	0.57	0.62	0.32	0.77	1.08	1.28
01.09.83	1.24	1.33	0.35	0.43	0.65	0.78	0.37	0.97	0.94
07.10.83	1.16	1.34	0.33	0.78	0.68	0.23	0.13	0.53	1.05
06.11.83	1.28	0.65	0.48	0.41	0.72	0.48	0.15	0.11	0.37
07.12.83	1.23	1.37	0.35	0.49	0.23	0.17	0.24	0.72	1.07
19.01.84	1.39	0.69	0.52	0.27	0.56	0.66	0.15	0.00	0.00
17.02.84	1.09	1.15	0.36	0.38	0.53	0.56	0.52	0.90	0.30
21.03.84	1.20	0.63	0.49	0.60	0.55	0.38	0.27	0.28	0.24
13.04.84	1.18	1.02	0.73	0.45	0.89	0.90	0.80	1.27	0.81
08.05.84	1.29	1.59	0.56	0.68	1.07	1.12	0.95	1.52	1.00
07.06.84	1.30	0.85	0.64	0.67	0.79	0.47	0.87	1.42	1.08
25.07.84	1.40	1.49	0.69	0.50	0.99	0.88	0.81	1.41	1.26
08.08.84	1.51	1.15	0.38	0.66	0.53	0.78	0.52	0.99	1.17
25.09.84	1.55	1.28	0.31	0.67	1.19	0.83	0.53	0.72	0.57

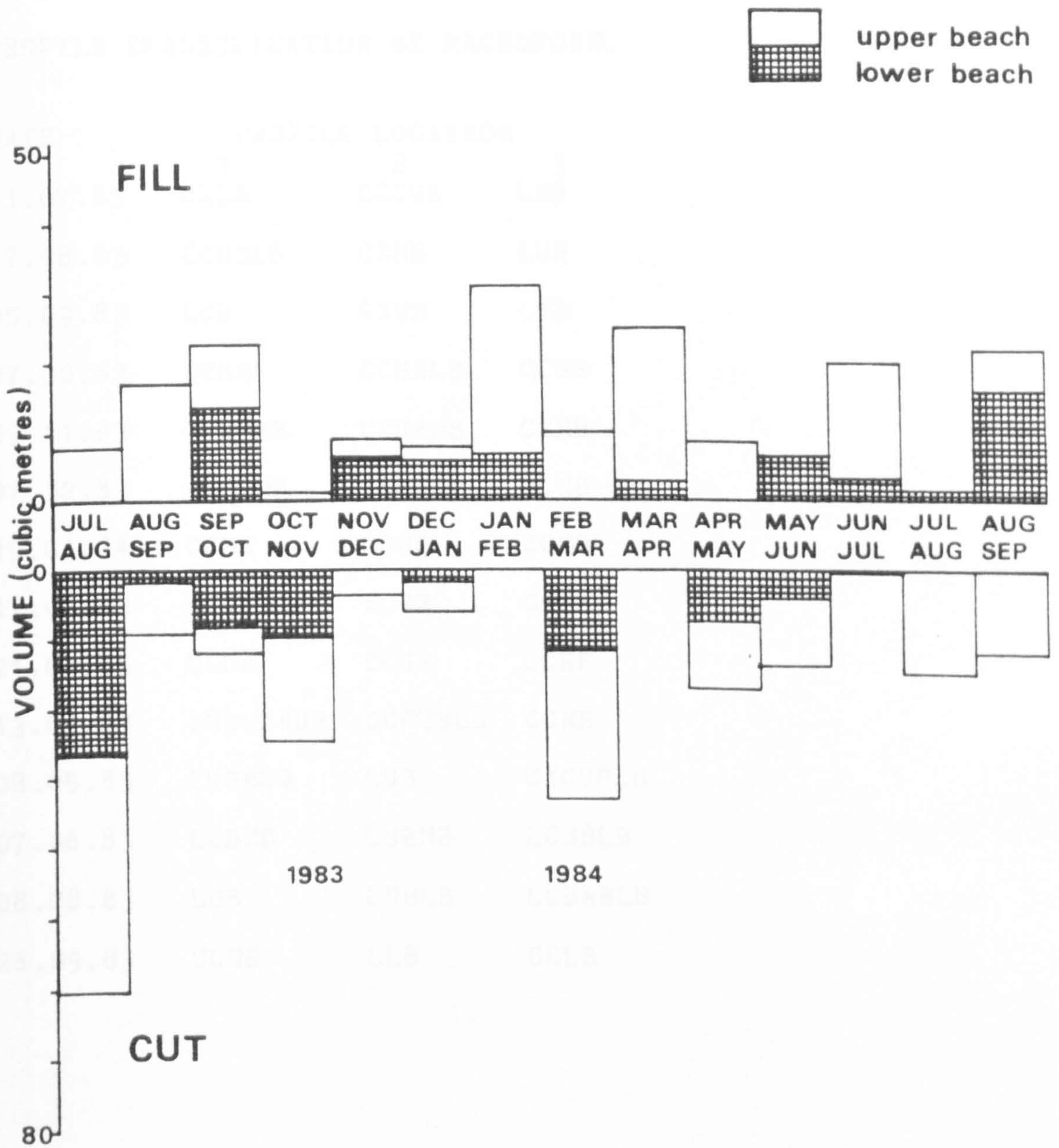


TABLE 45

VOLUMETRIC CHANGES BETWEEN MONTHLY SURVEYS  
MAN O'WAR BEACH

TABLE 46

MAN O'WAR MONTHLY BEACH PROFILE DATA (1983/1984)

PROFILE CLASSIFICATION BY MACROFORM.

DATE	PROFILE LOCATION		
	1	2	3
11.07.83	CXLB	CCCUB	LNB
17.08.83	CCUBLB	CXMB	LUB
05.09.83	LUB	CXUB	LNB
07.10.83	CCUB	CCUBLB	CCUB
09.11.83	CCUBMB	CCUBMB	CCMB
07.12.83	CCUBMB	LUBRUB	CCNB
19.01.84	CCMB	CCNB	CCMB
17.02.83	CCUB	CCUB	CCLB
21.03.83	CCUB	CCUB	CCNB
13.04.83	LUBLBRUB	CCCUBLB	CCNB
08.05.83	LUBRUB	LUB	CXCUBLB
07.06.83	LUBMB	LUBMB	LCUBLB
08.08.83	LUB	LUBLB	LUBNBLB
26.09.83	CCNB	LLB	CCLB

TABLE 47

MAN O'WAR MONTHLY BEACH PROFILE DATA (1983/1984).

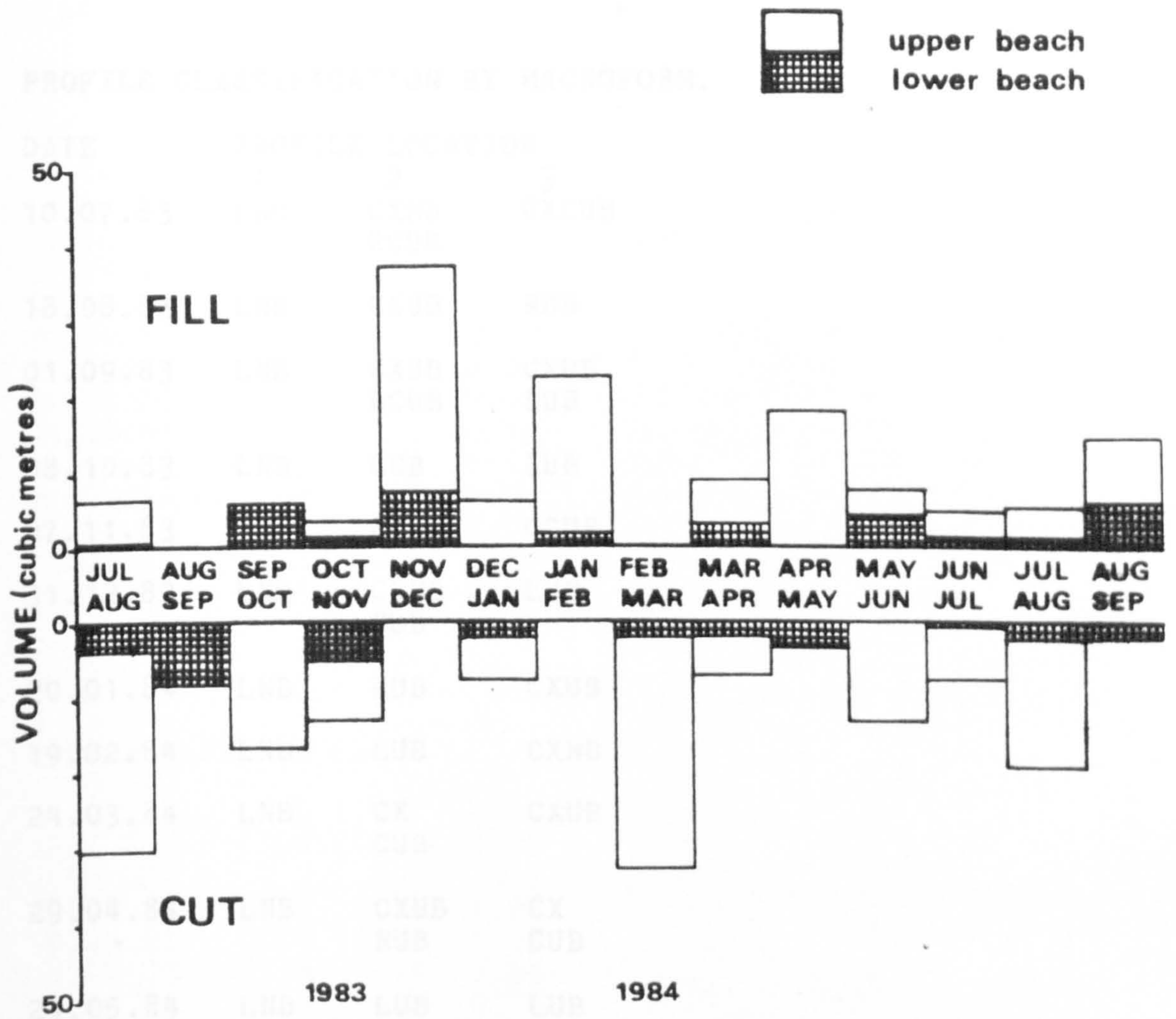
1. BRUUN INDEX VALUES.

DATE	PROFILE LOCATION		
	1	2	3
11.07.83	0.06	0.05	0.06
17.08.83	0.03	0.09	0.01
05.09.83	0.04	0.07	0.10
07.10.83	0.03	0.08	0.04
09.11.83	0.03	0.02	0.04
07.12.83	0.03	0.05	0.04
19.01.84	0.01	0.04	0.05
17.02.84	0.03	0.05	0.05
21.03.84	0.03	0.07	0.04
13.04.84	0.05	0.06	0.05
08.05.84	0.04	0.07	0.08
07.06.84	0.03	0.06	0.05
25.07.84	0.05	0.07	0.06
08.08.84	0.05	0.06	0.05
26.09.84	0.04	0.04	0.07

2. MEAN DEPTH VALUES.

DATE	PROFILE LOCATION		
	1	2	3
11.07.83	0.82	0.61	1.05
17.08.83	0.35	0.91	0.15
05.09.83	0.34	0.58	1.04
07.10.83	0.37	1.00	0.55
09.11.83	0.34	0.16	0.59
07.12.83	0.32	0.47	0.52
19.01.84	0.07	0.53	0.64
17.02.84	0.31	0.69	1.01
21.03.84	0.32	0.84	0.49
13.04.84	0.62	0.81	0.84
08.05.84	0.47	0.72	1.11
07.06.84	0.30	0.72	0.84
25.07.84	0.63	0.91	1.01
08.08.84	0.62	0.66	0.79
26.09.84	0.59	0.50	1.13





**TABLE 48**

**VOLUMETRIC CHANGES BETWEEN MONTHLY SURVEYS  
 MUPE BEACH**

TABLE 49

MUPE MONTHLY BEACH PROFILE DATA (1983/1984).

PROFILE CLASSIFICATION BY MACROFORM.

DATE	PROFILE LOCATION		
	1	2	3
10.07.83	LNB	CXMB RCUB	CXCUB
18.08.83	LNB	CXUB	RUB
01.09.83	LNB	CXUB RCUB	CXUB RUB
08.10.83	LNB	LUB	LUB
27.11.83	LNB	CCUB	CCUB
31.12.83	LNB	CXMB CUB	LUB
20.01.84	LNB	LUB	CXUB
19.02.84	LNB	LUB	CXNB
24.03.84	LNB	CX CUB	CXUB
29.04.84	LNB	CXUB RUB	CX CUB
29.05.84	LNB	LUB RUB	LUB RUB
09.06.84	LNB	CXUB RUB	LUB RUB
07.07.84	LNB	CX CUB	LCUB
09.08.84	LNB	CX CUB	LUB RUB
26.09.84	LNB	LUB	LUB

TABLE 50

MUPE MONTHLY BEACH PROFILE DATA (1983/1984)

1. BRUUN INDEX VALUES.

DATE	PROFILE LOCATION		
	1	2	3
10.07.83	0.04	0.57	0.78
18.08.83	0.04	0.07	0.07
01.09.83	0.02	0.07	0.06
08.10.83	0.02	0.05	0.01
27.11.83	0.01	0.03	0.02
31.12.83	0.04	0.06	0.04
20.01.84	0.04	0.06	0.06
19.02.84	0.05	0.08	0.07
24.03.84	0.03	0.06	0.01
29.04.84	0.04	0.05	0.33
29.05.84	0.05	0.07	0.04
09.06.84	0.04	0.07	0.03
07.07.84	0.05	0.04	0.03
09.08.84	0.03	0.06	0.03
26.09.84	0.03	0.06	0.03

2. MEAN DEPTH VALUES.

DATE	PROFILE LOCATION		
	1	2	3
10.07.83	0.58	0.74	1.07
18.08.83	0.54	0.92	1.05
01.09.83	0.18	0.86	0.60
08.10.83	0.24	0.68	0.16
27.11.83	0.16	0.30	0.30
31.12.83	0.55	0.91	0.49
20.01.84	0.45	0.79	0.76
19.02.84	0.68	1.10	0.96
24.03.84	0.32	0.86	0.43
29.04.84	0.53	0.69	0.47
29.05.84	0.65	0.93	0.62
09.06.84	0.68	0.76	0.45
07.07.84	0.81	0.46	0.40
09.08.84	0.40	0.79	0.36
26.09.84	0.38	0.79	0.73

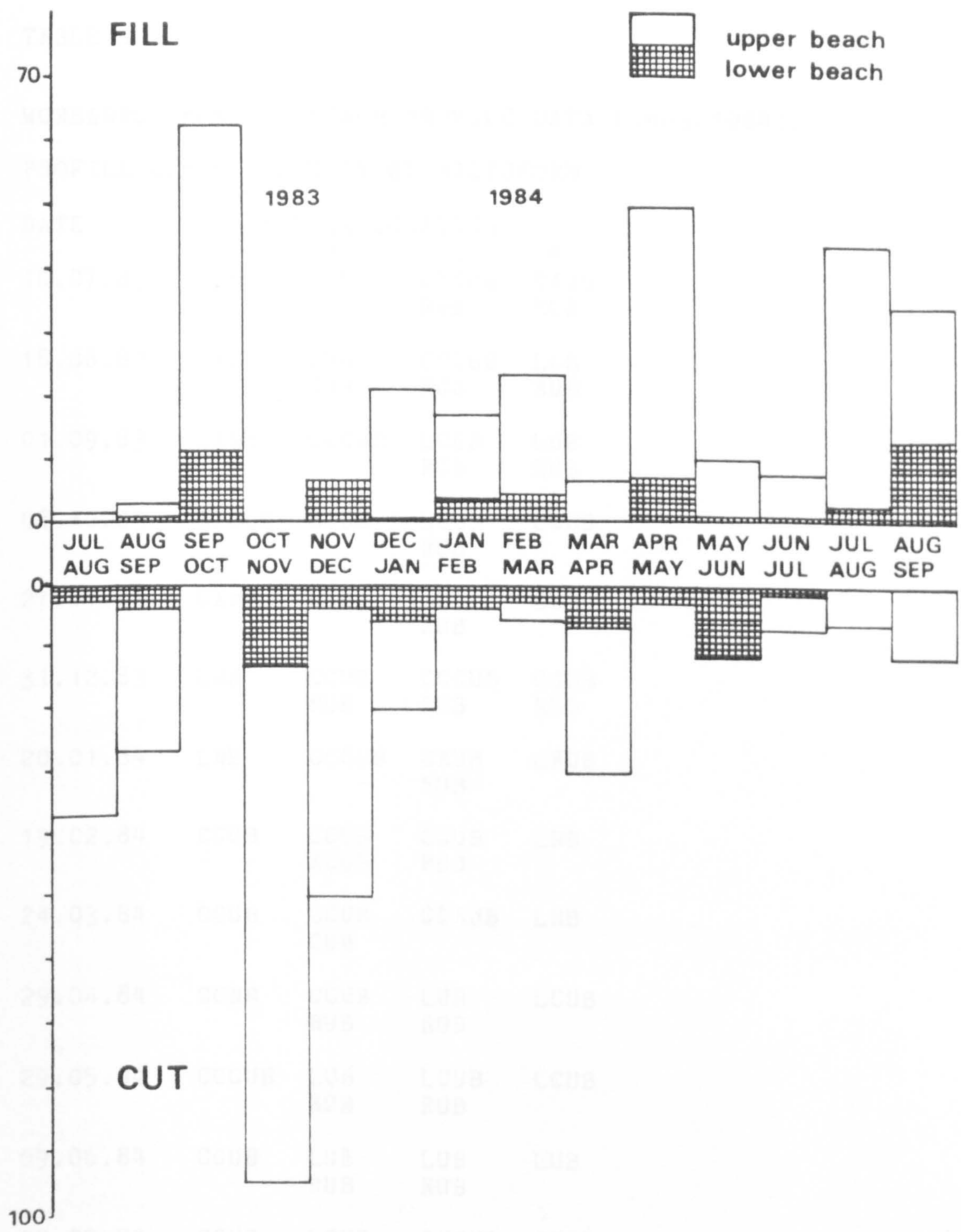


TABLE 51

VOLUMETRIC CHANGES BETWEEN MONTHLY SURVEYS  
WORBARROW BEACH

TABLE 52

WORBARROW MONTHLY BEACH PROFILE DATA (1983/1984).  
 PROFILE CLASSIFICATION BY MACROFORM.

DATE	PROFILE LOCATION			
	1	2	3	4
10.07.83	LNB	LUB	CXCUB RUB	CXUB RUB
18.08.83	CXNB	LUB CUB	CCCUB RUB	LUB RUB
01.09.83	CXNB	CCCUB	LCUB RUB	LUB RUB
08.10.83	CXCUB	CCUB	LCUB RUB	LCUB
27.11.83	CXNB	LUB	LUB RUB	LNB
31.12.83	LNB	CCUB RUB	CCCUB RUB	CCUB RUB
20.01.84	LNB	CCCUB	CXUB RUB	LRUB
19.02.84	CCUB	CCUB RCUB	CCUB RUB	LNB
24.03.84	CCUB	CCUB CUB	CCRUB	LNB
29.04.84	CCNB	CCUB RUB	LUB RUB	LCUB
29.05.84	CCCUB	LUB RUB	LCUB RUB	LCUB
09.06.84	CCUB	LUB RUB	LUB RUB	LUB
07.07.84	CCUB	LCUB RUB	CXCUB RUB	CXUB
09.08.84	LCUB	LCUB RUB	CXUB RUB	CXUB
26.09.84	LUB	CCUB	CXUB RUB	LCUB

TABLE 53

WORBARROW MONTHLY BEACH PROFILE DATA (1983/1984).

1. BRUUN INDEX VALUES.

DATE	PROFILE LOCATION			
	1	2	3	4
10.07.83	0.06	0.07	0.05	0.05
18.08.83	0.05	0.05	0.06	0.05
01.09.83	0.05	0.05	0.06	0.05
08.10.83	0.07	0.06	0.06	0.05
27.11.83	0.06	0.05	0.04	0.02
31.12.83	0.04	0.01	0.01	0.03
20.01.84	0.02	0.01	0.04	0.03
19.02.84	0.01	0.02	0.04	0.03
24.03.84	0.02	0.03	0.03	0.05
29.04.84	0.01	0.05	0.02	0.03
29.05.84	0.03	0.04	0.03	0.05
09.06.84	0.03	0.04	0.04	0.05
07.07.84	0.03	0.04	0.05	0.05
09.08.84	0.05	0.04	0.07	0.04
26.09.84	0.05	0.05	0.06	0.05

2. MEAN DEPTH VALUES.

DATE	PROFILE LOCATION			
	1	2	3	4
10.07.83	0.97	1.29	0.84	1.05
18.08.83	0.88	0.98	1.06	0.89
01.09.83	0.80	0.86	1.10	0.77
08.10.83	1.33	1.03	1.18	1.11
27.11.83	0.95	0.82	0.67	0.36
31.12.83	0.71	0.12	0.22	0.43
20.01.84	0.27	0.19	0.61	0.52
19.02.84	0.18	0.28	0.63	0.72
24.03.84	0.28	0.48	0.51	0.93
29.04.84	0.03	0.70	0.38	0.63
29.05.84	0.46	0.63	0.53	1.17
09.06.84	0.55	0.64	0.71	0.97
07.07.84	0.50	0.68	0.84	0.89
09.08.84	1.02	0.68	1.28	0.77
26.09.84	0.98	0.88	1.00	0.83



PLATE 37. BEACH CONFIGURATION IN DURDLE DOOR COVE, (PROFILE I), FOLLOWING A PROLONGED PERIOD UNDER A SOUTH EASTERLY WAVE REGIME, (EXTREME EVENT).



PLATE 38. BEACH CONFIGURATION IN FRONT OF SCRATCHY BOTTOM (DURDLE DOOR BEACH), FOLLOWING A PERIOD UNDER A SOUTH EASTERLY WAVE REGIME, (EXTREME EVENT).



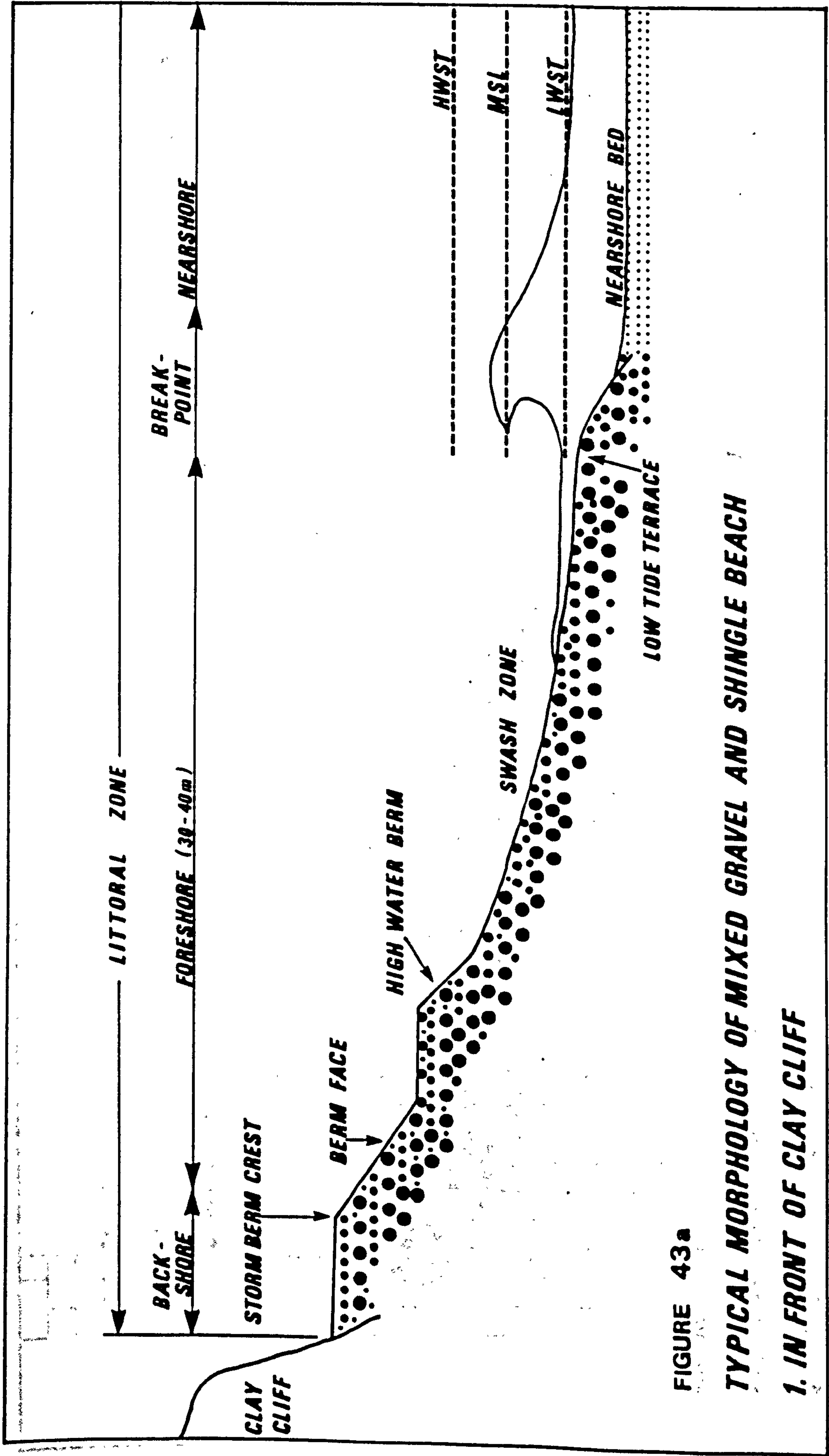


FIGURE 43a

TYPICAL MORPHOLOGY OF MIXED GRAVEL AND SHINGLE BEACH

1. IN FRONT OF CLAY CLIFF

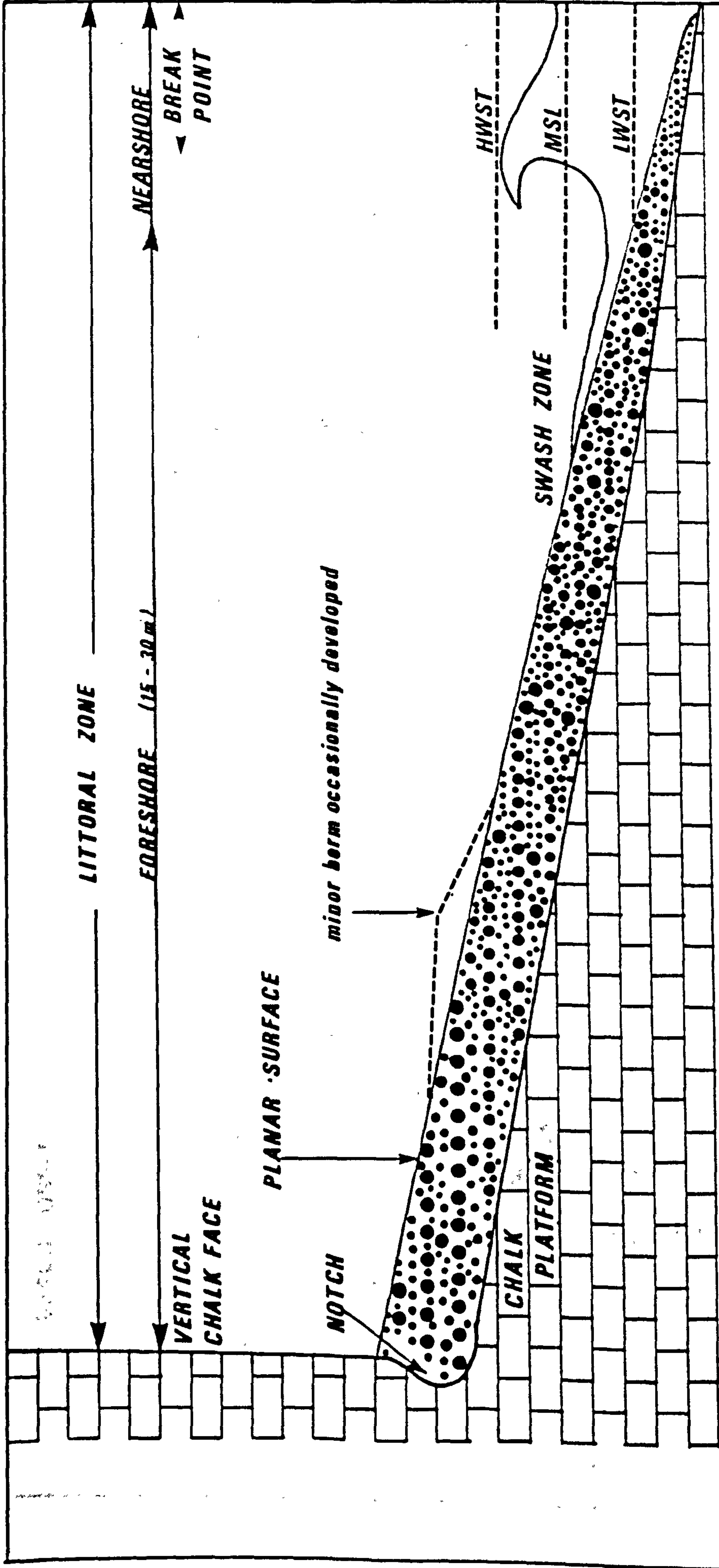


FIGURE 43b

**TYPICAL MORPHOLOGY OF MIXED GRAVEL AND SHINGLE BEACH**

**2. ON CHALK PLATFORM**

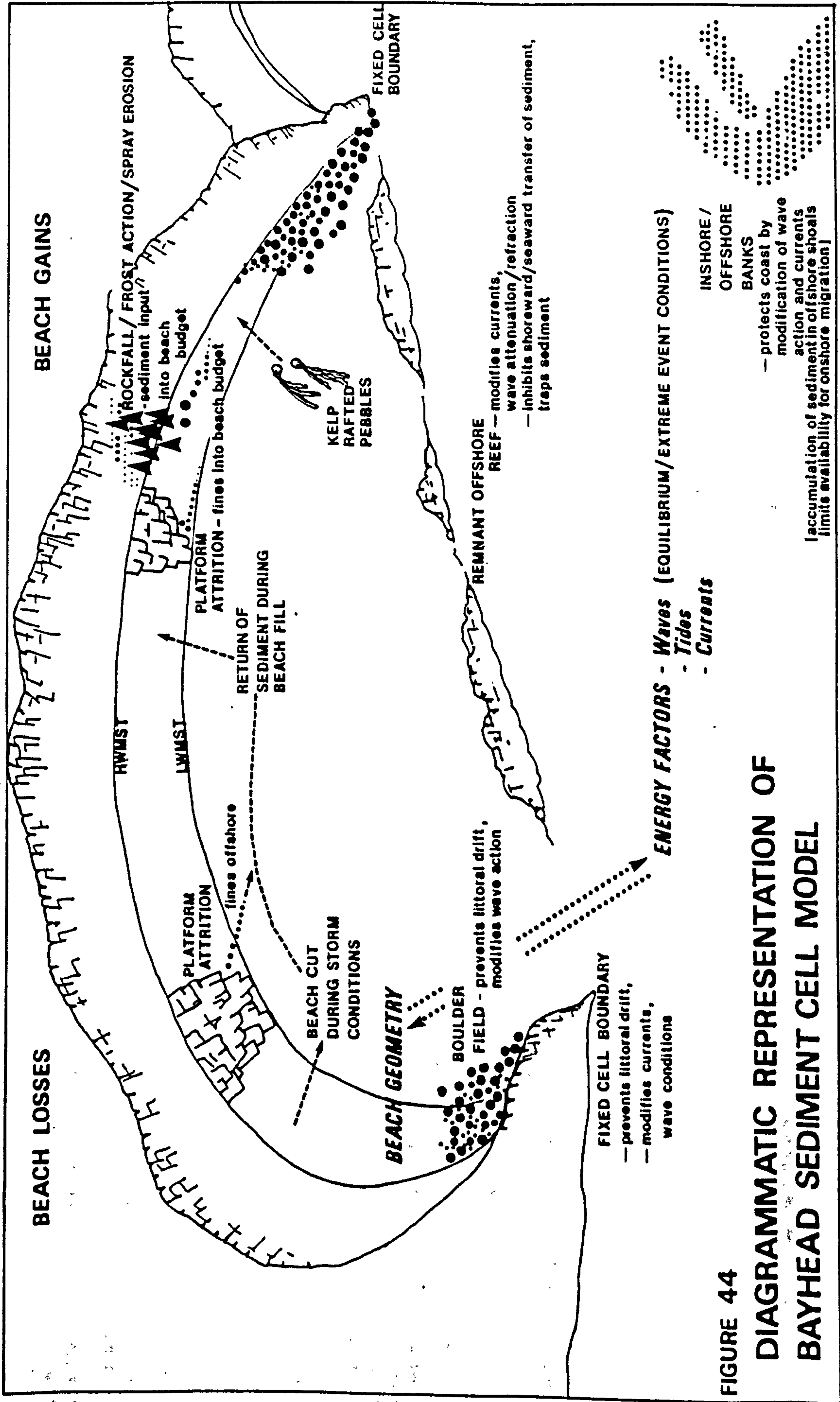


FIGURE 44

**DIAGRAMMATIC REPRESENTATION OF BAYHEAD SEDIMENT CELL MODEL**

# TOWFISH

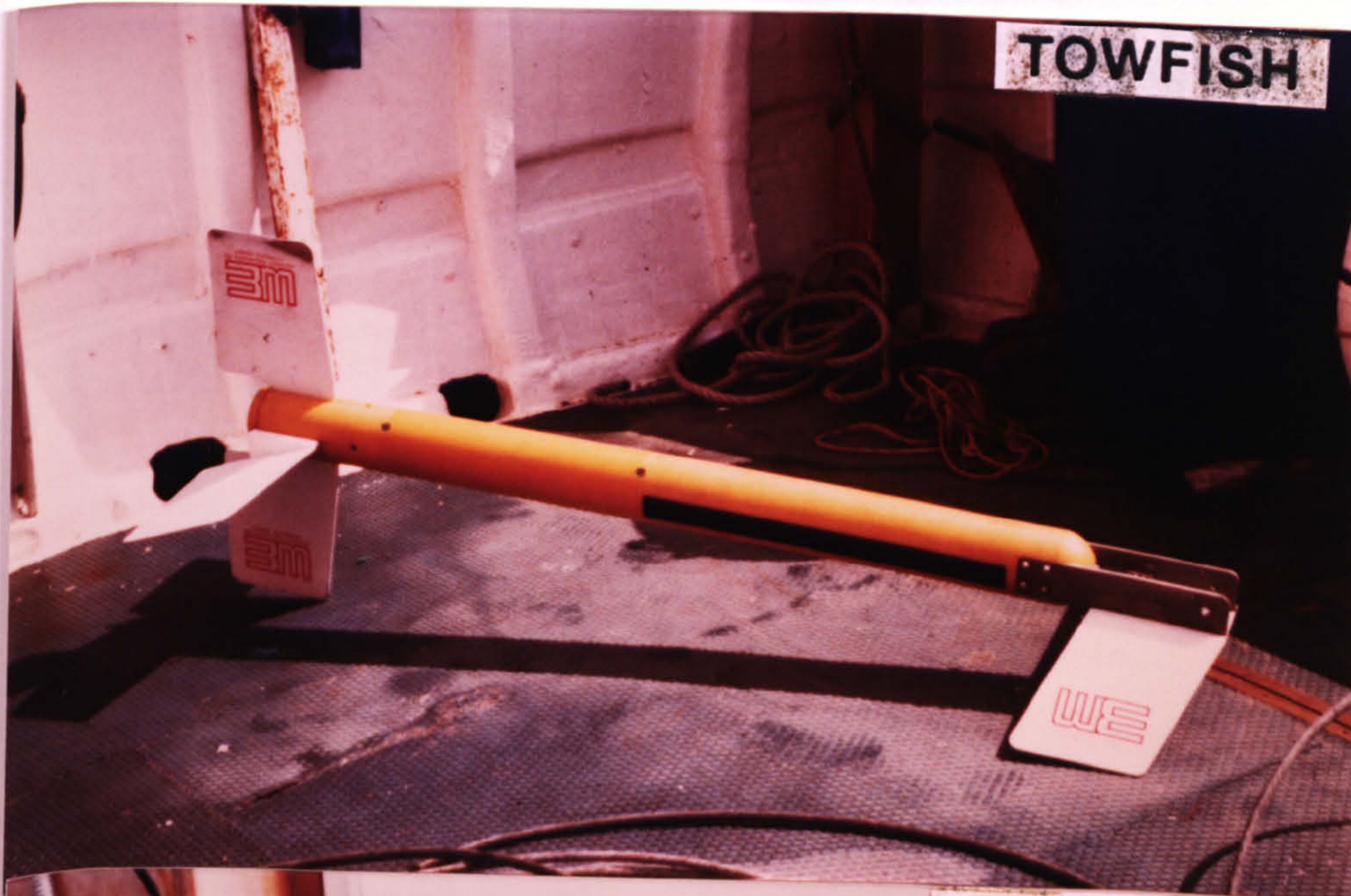
# RECORDER

# SIGNAL PROCESSING UNIT

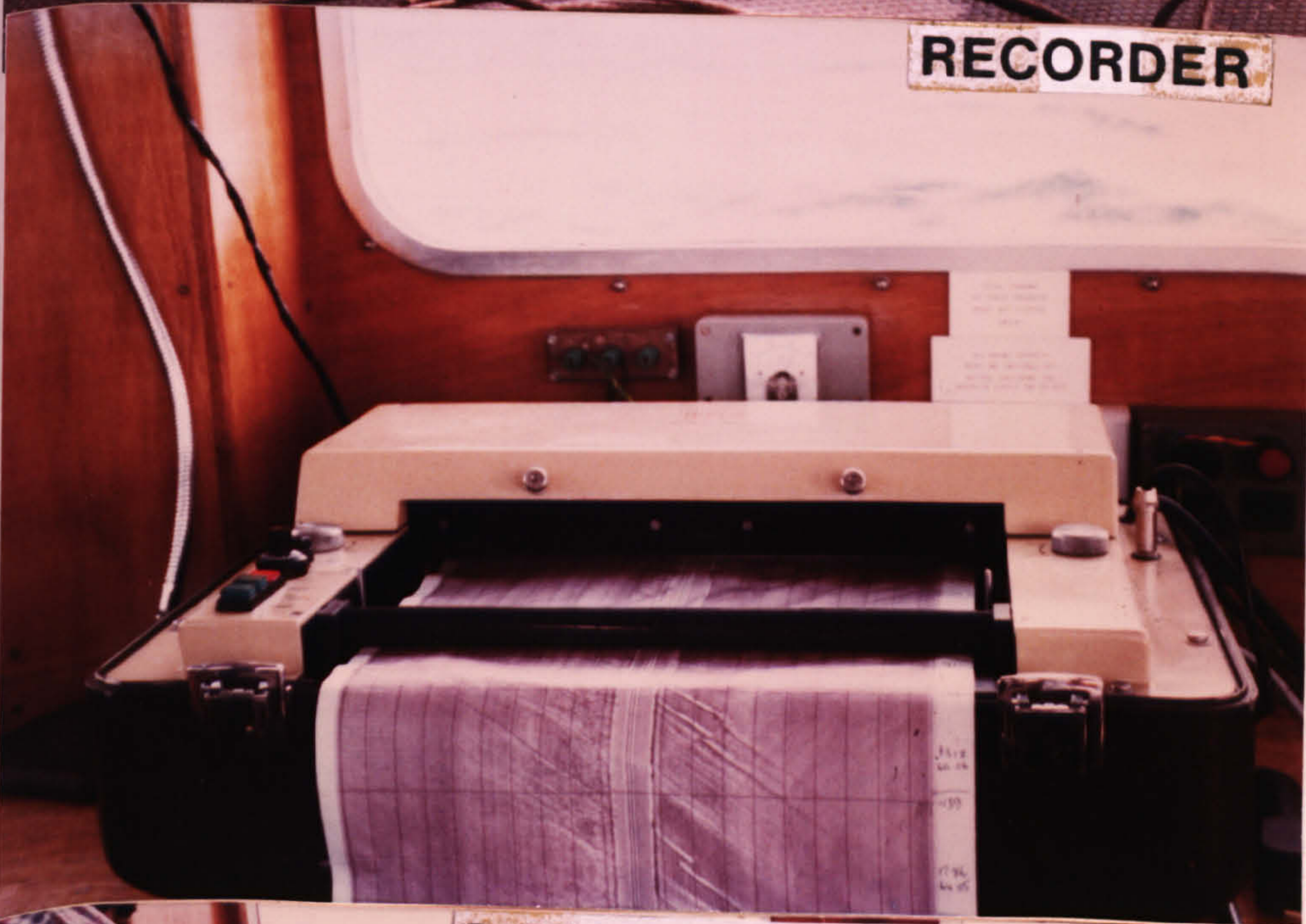
<b>Physical Dimensions:</b>	Length 133 cms (52 inches) Body dia. 9 cms (3.5 inches) 9.5 kgs (21 lbs) Rear 53 cms (20.5 inches) Front 46 cms (18 inches) Resilient and non hygroscopic plastic Solid encapsulated, flush mounted, depression angle 10°	Supplied in rugged, environmental carrying case, 549mm wide by 261mm high by 448mm deep.	Housed in rugged, environmental case 554mm wide by 239mm high by 524mm deep.
<b>Weight in air</b>	9.5 kgs (21 lbs)		19 kgs (approx.)
<b>Fin span</b>	Rear 53 cms (20.5 inches) Front 46 cms (18 inches)		Housed in instrument case 15 kgs (approx. 33 lbs.)
<b>Body material</b>	Resilient and non hygroscopic plastic		
<b>Transducers</b>	Solid encapsulated, flush mounted, depression angle 10°		
<b>Tail fins</b>	In the event of snagging, the tail fins knock free. Down to 350 metres (1,147 ft).		
<b>Operating depth</b>	Down to 350 metres (1,147 ft).		
<b>Operational. Frequency</b>	100 kHz nominal		24V d.c. nominal (21V to 28V). Supply isolated from equipment chassis.
<b>Source level</b>	227 dB re 1 $\mu$ Pa at 1 metre.		Protection; equipment will refuse to switch on if supply voltage is out of range or reverse polarity.
<b>Beam pattern</b>	horizontal < 1.5° at 3dB points vertical 50° at 3dB points.		75 metre, 150 metre, 300 metre, 600 metre. 15m intervals (slant range)
<b>Pulse length</b>	100 $\mu$ S.		Adaptive; computer controlled.
<b>Pulse rate</b>	10 pps (75 metre range) 5 pps (150 metre range) 2.5 pps (300 metre range) 1.25 pps (600 metre range)		Digital; 2000 picture elements.
<b>Recommended towing speed:</b>	3 to 10 knots.		Port and starboard displayed from centre of record outwards.
<b>Physical Dimensions:</b>			
<b>Weight</b>	29 kgms (approx.)		
<b>Operational. Supply voltage:</b>	Alfax A, Semi wet, 11 inches wide. Rotating single helix drum driven under servo control at a constant speed. 2000 pixels across 10 inches under control of Signal Processing Unit. 1V pk or 10V pk link selectable. 10 k ohms (1V), 100 k ohms (10V).		
<b>Resolution;</b>	Input Signal for full black Input impedance		
<b>Event marker</b>	Front panel pushbutton; Prints next 2 complete lines full black. Hand held trigger switch voltage free contact closure for remote event marker. Stepper motor drive under control of Signal Processing Unit.		
<b>Paper feed</b>	Stepped 0.167mm per pulse. Input optically isolated. Pulse required 3V to 30V, minimum width 300 $\mu$ S.		

**COURTESY OF  
WAVERLEY ELECTRONICS LTD.**

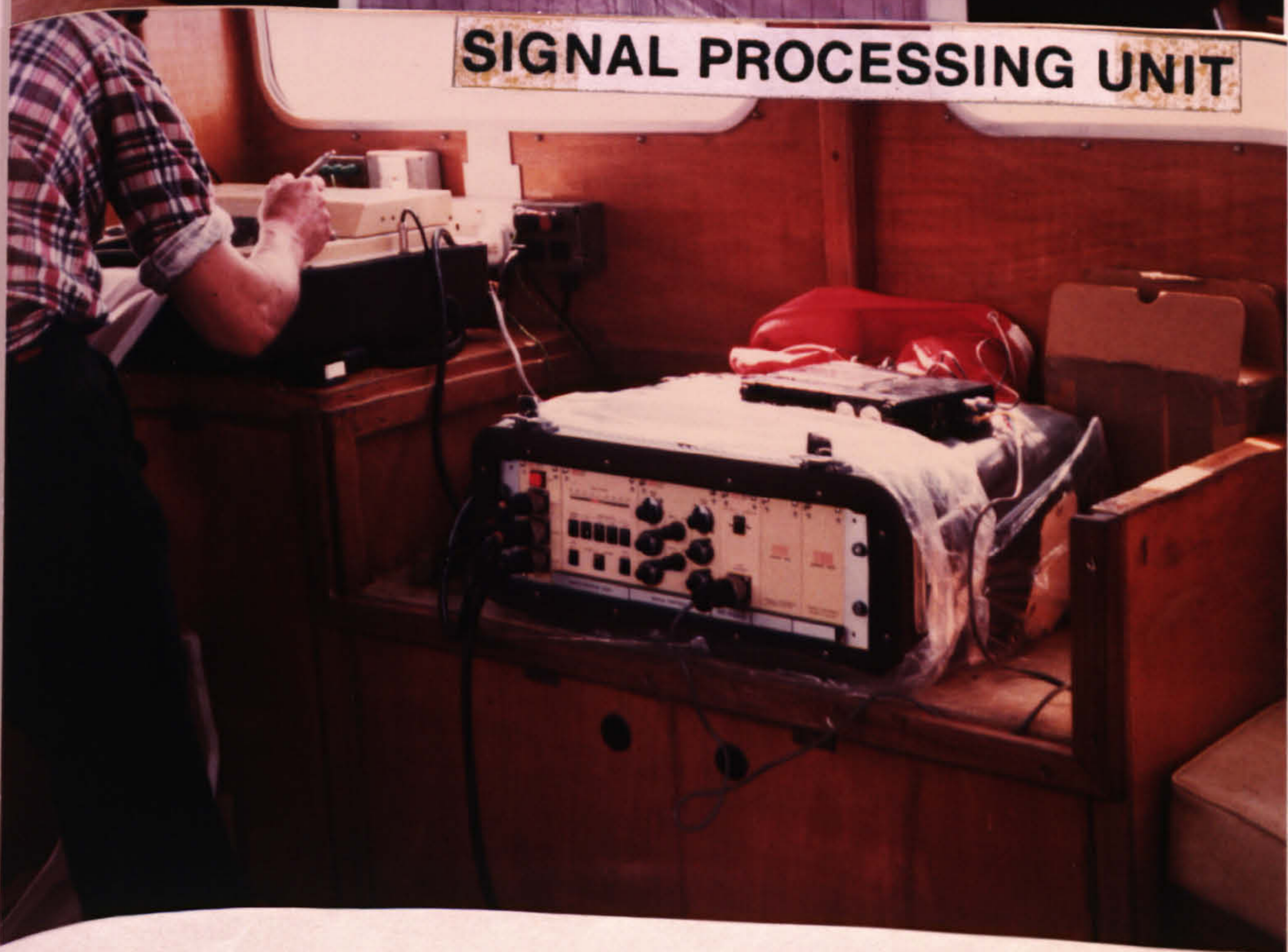
# APPENDIX 1 SPECIFICATION FOR WAVERLEY 3000 SIDE-SCAN SONAR



**TOWFISH**



**RECORDER**



**SIGNAL PROCESSING UNIT**

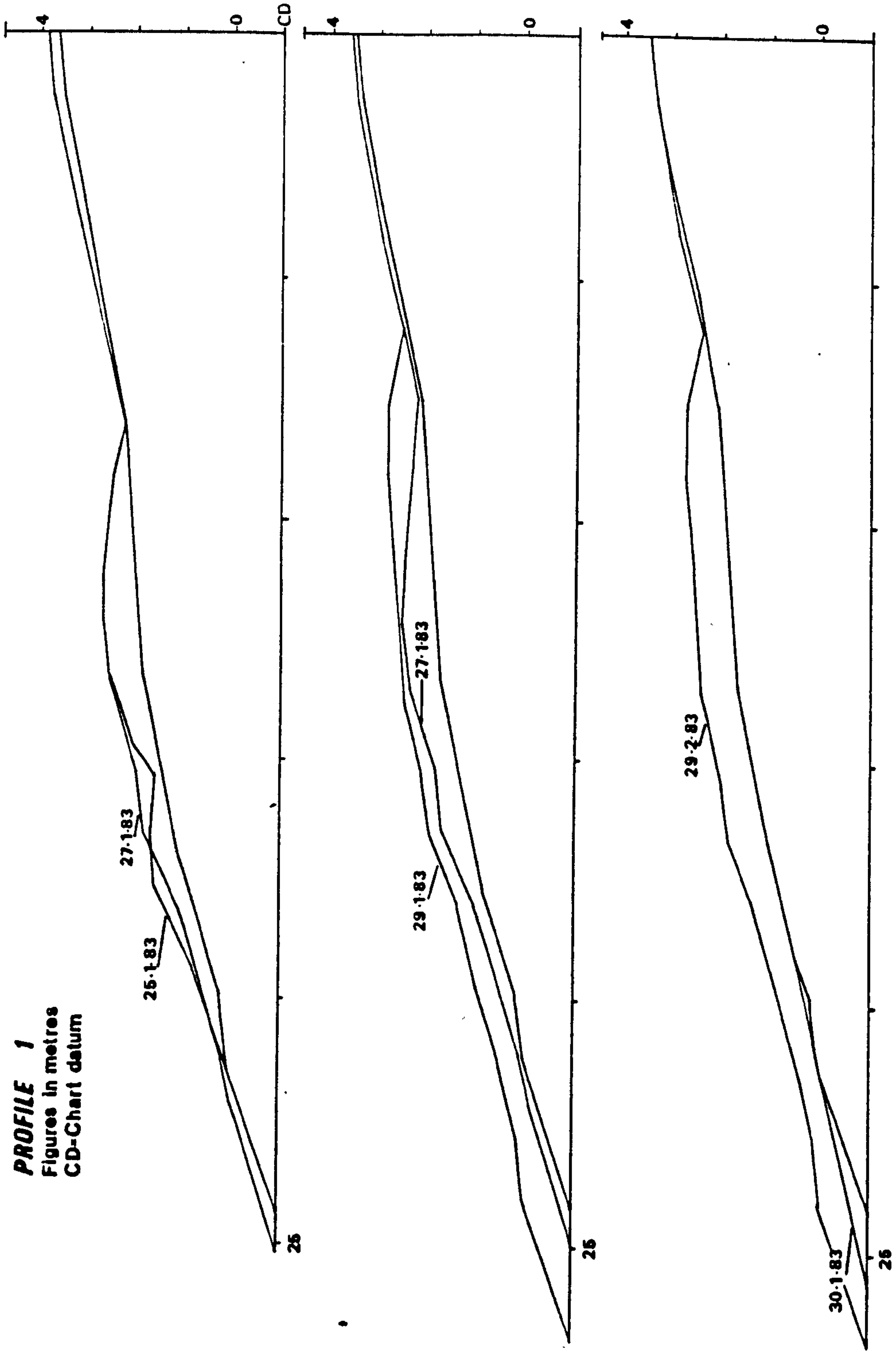
## **APPENDIX 2**

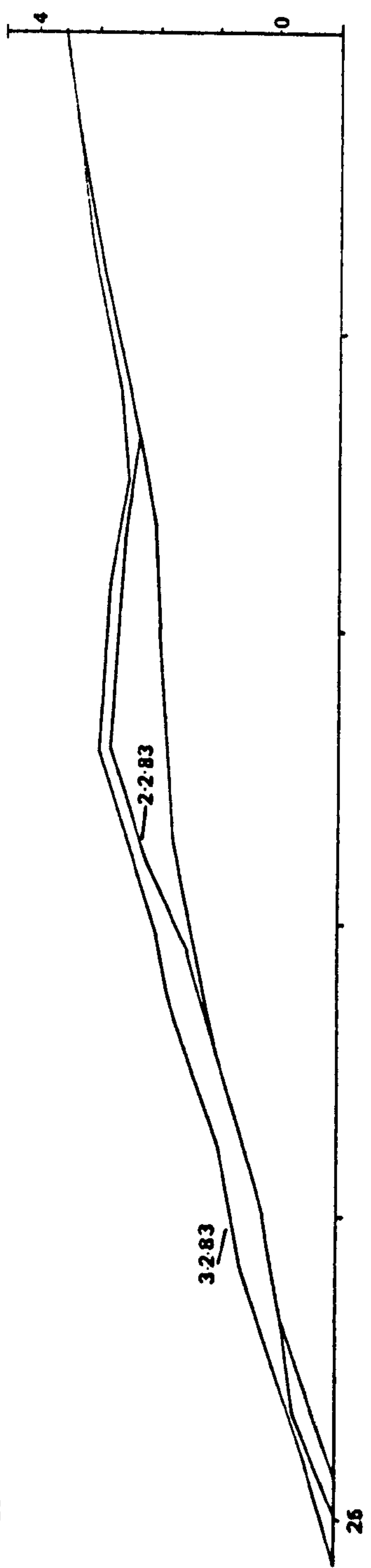
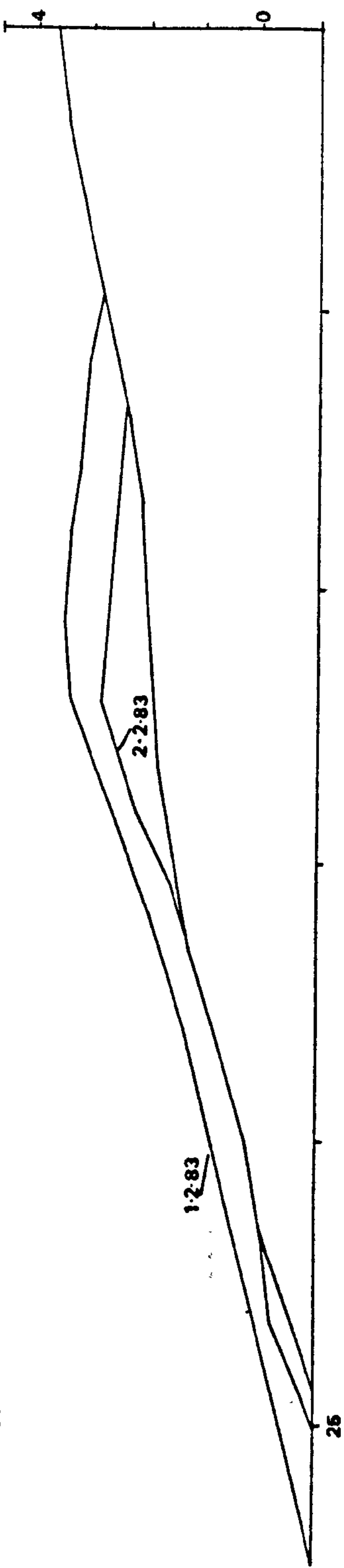
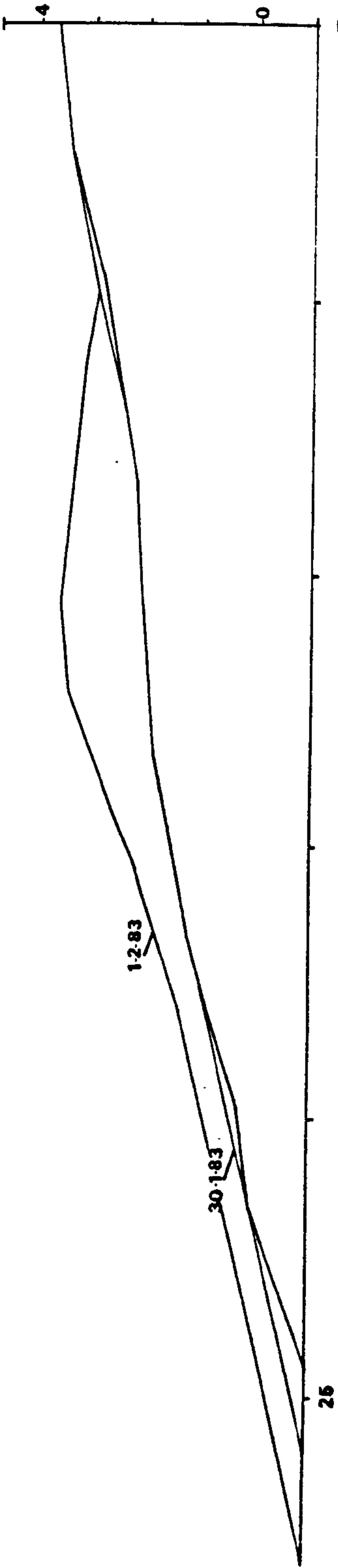
**Durdle Door One Month Survey**

**January - February 1983**

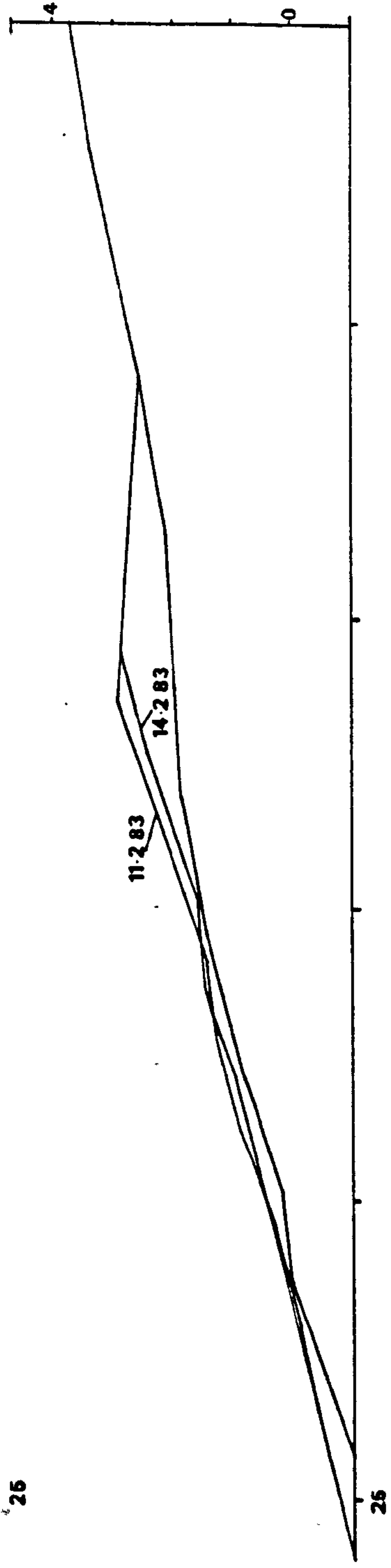
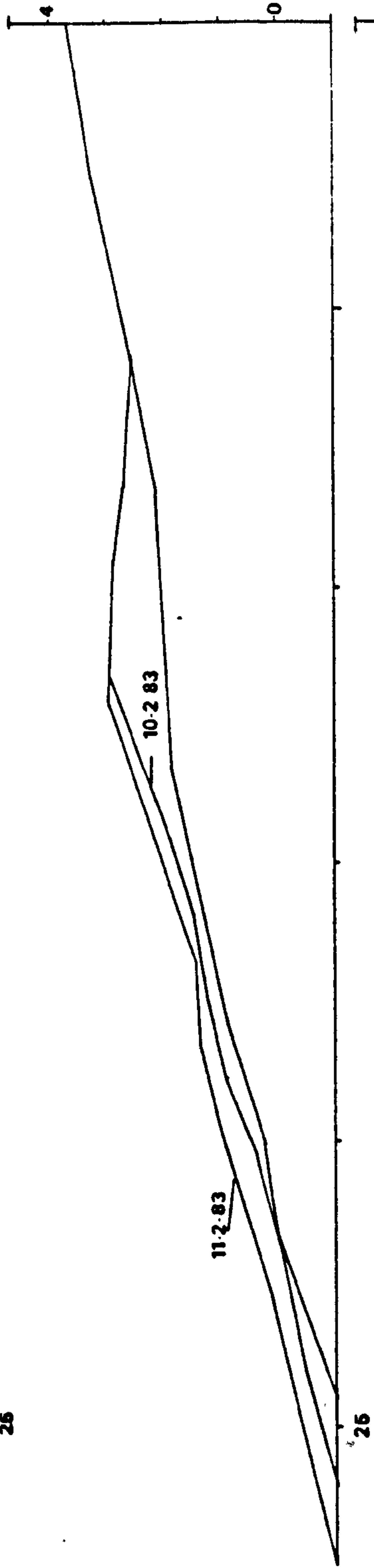
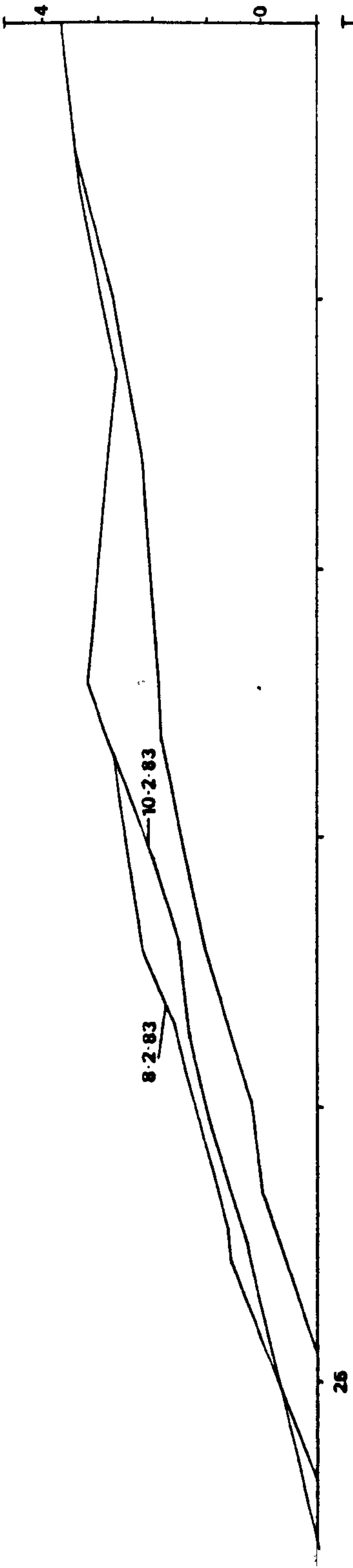
**Selected profile changes**

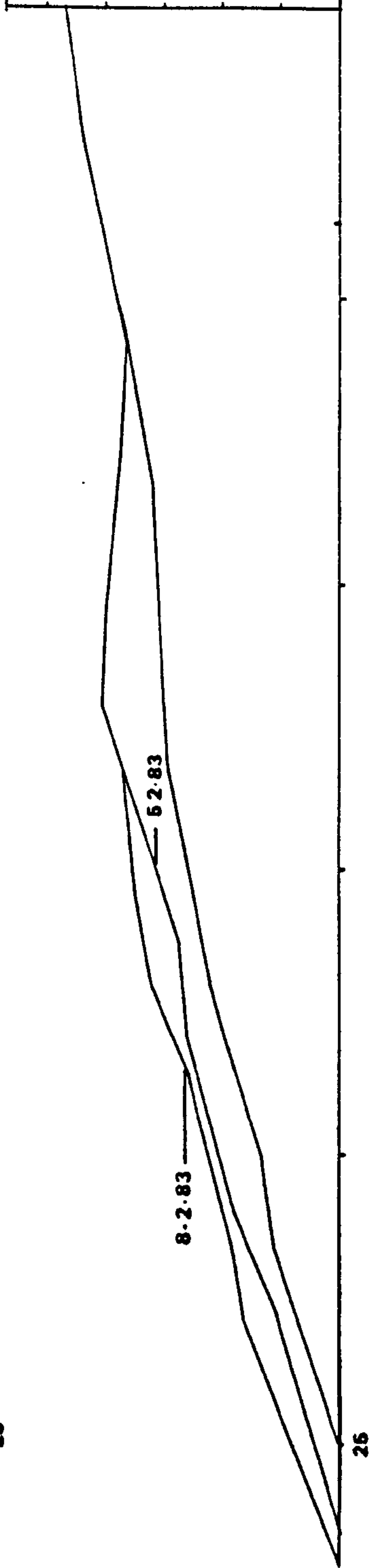
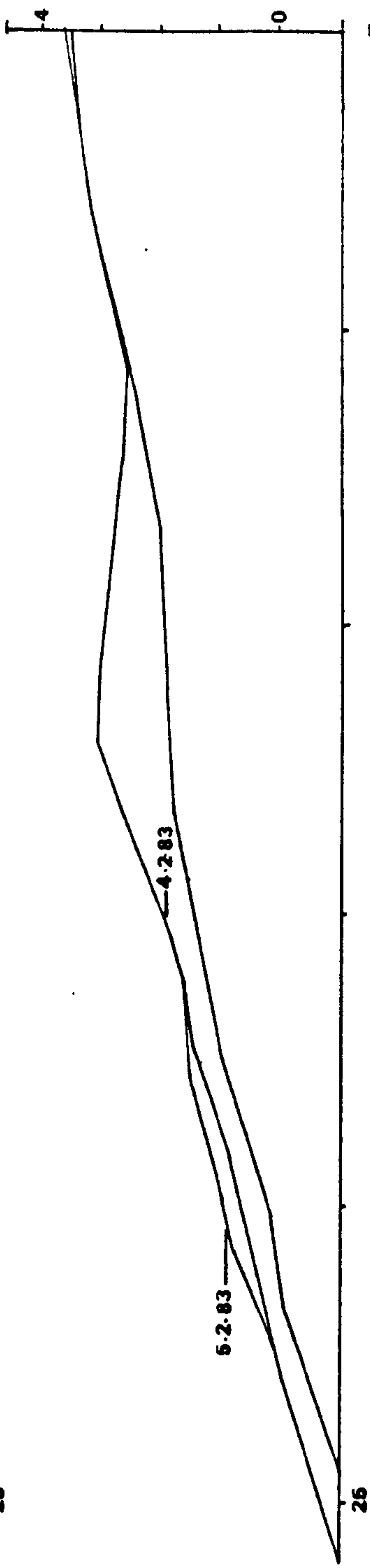
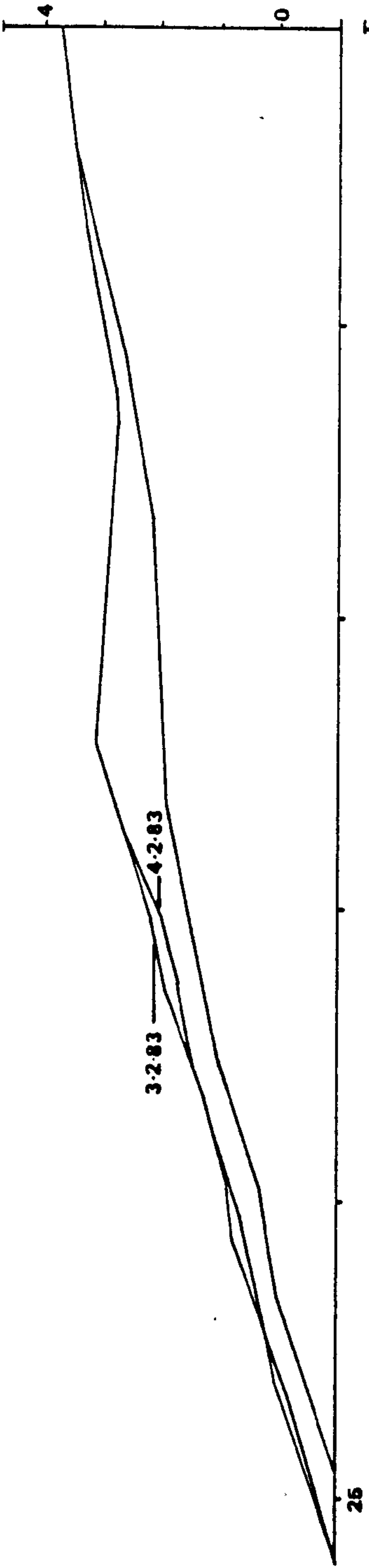
**PROFILE 1**  
Figures in metres  
CD-Chart datum

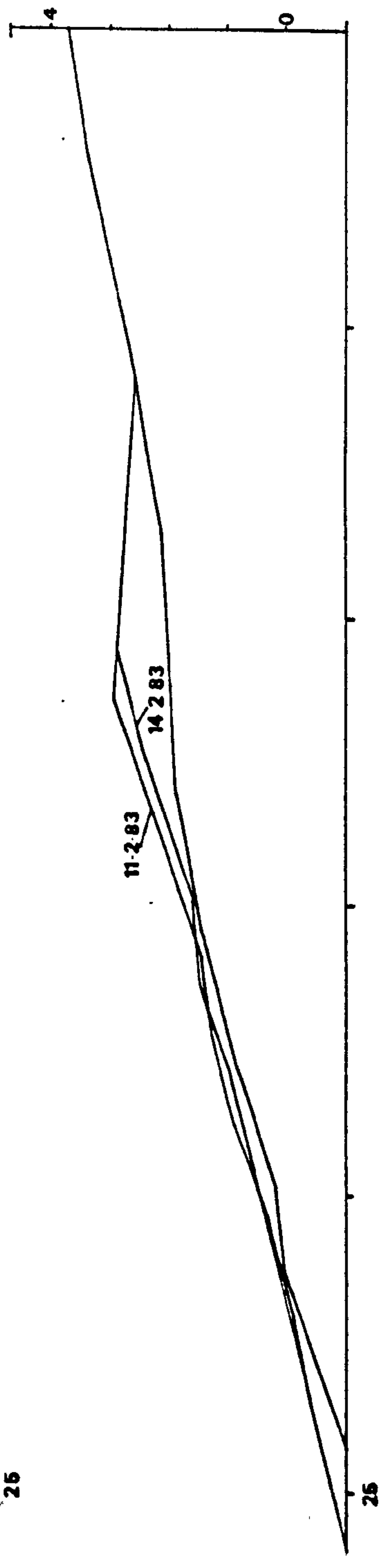
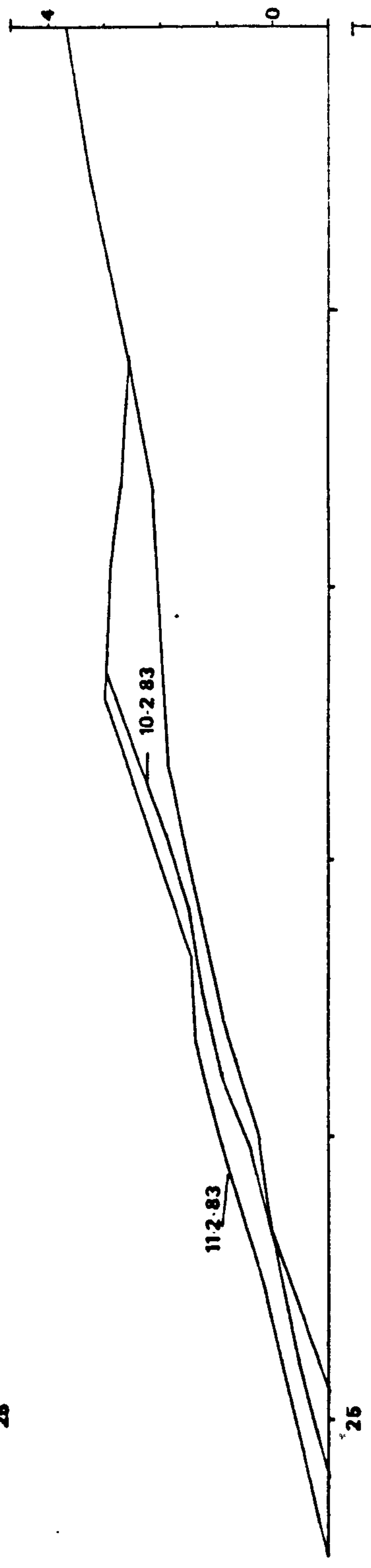
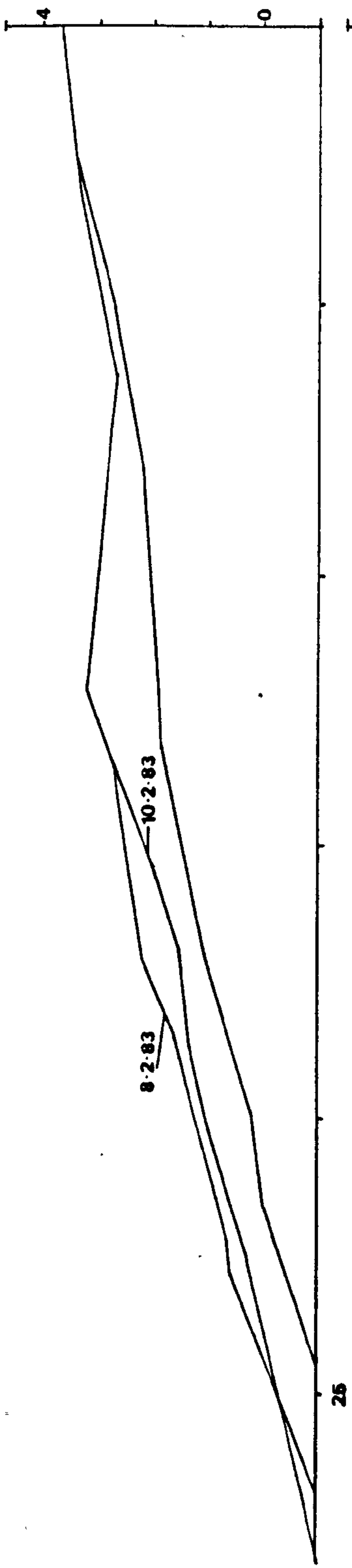












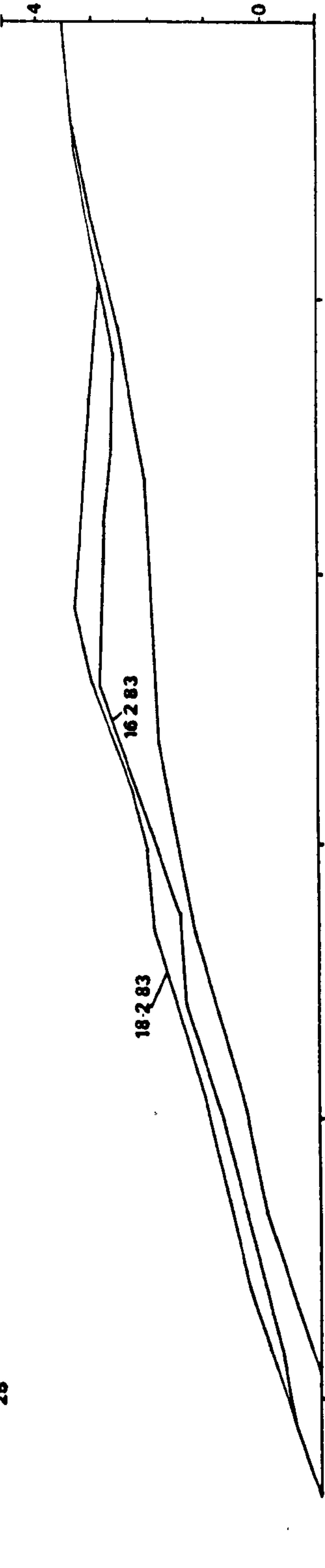
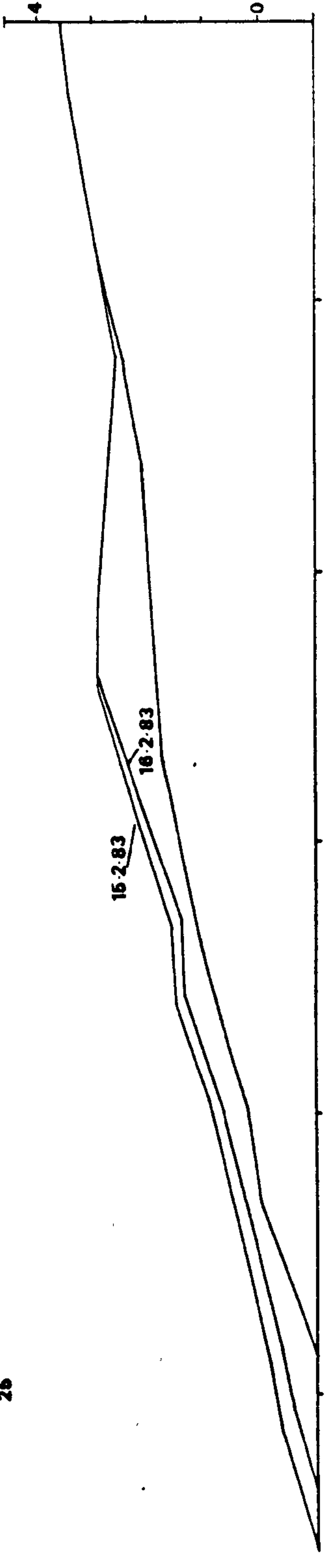
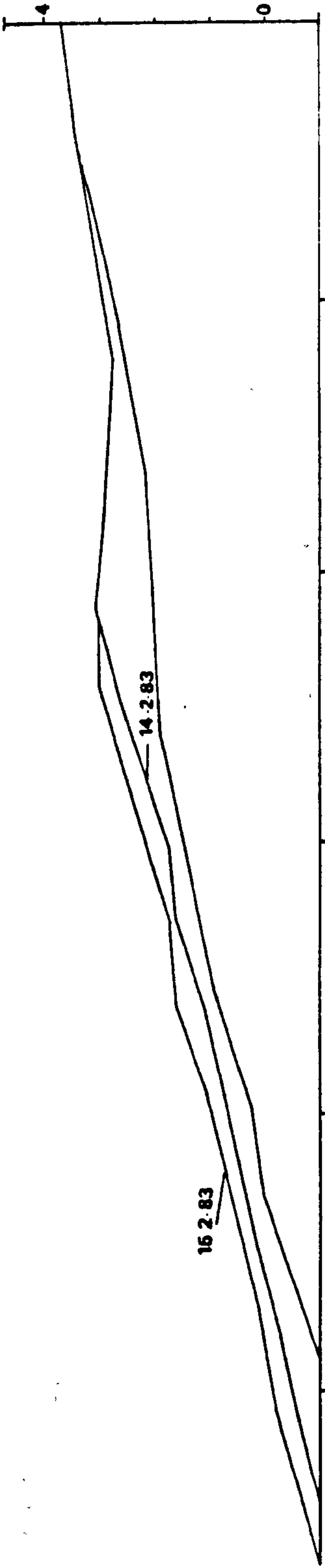
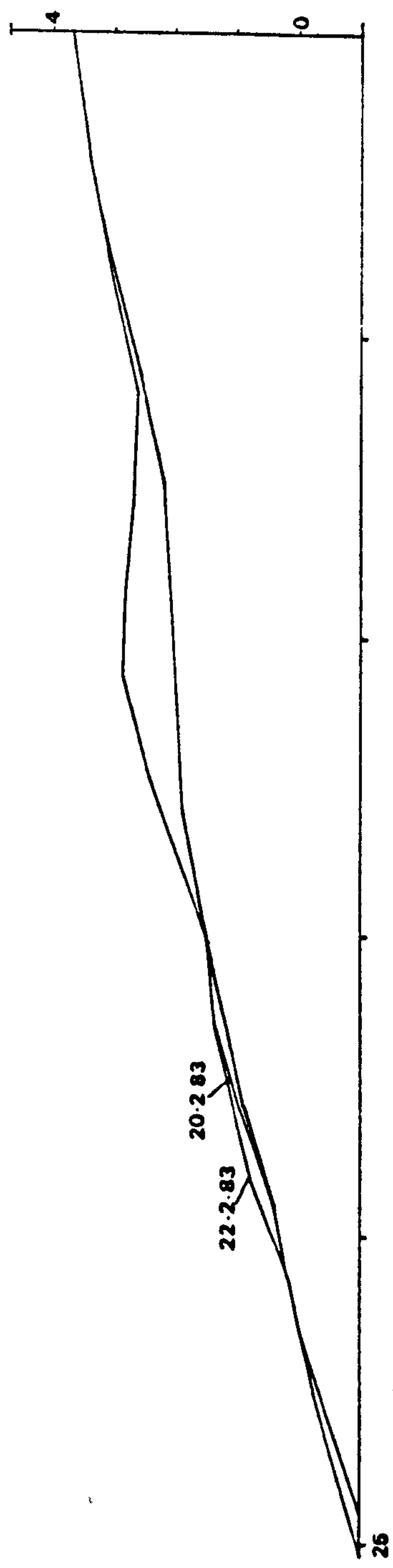
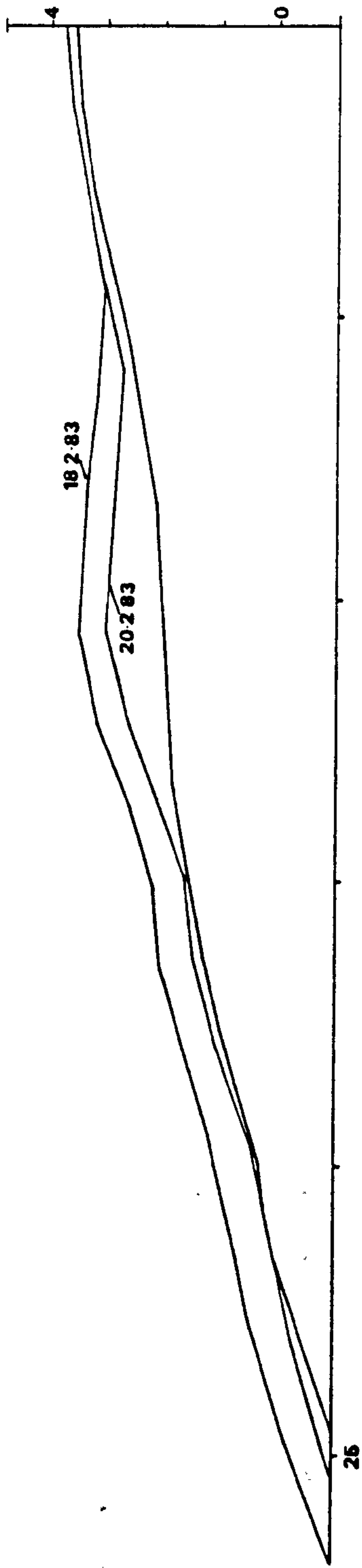
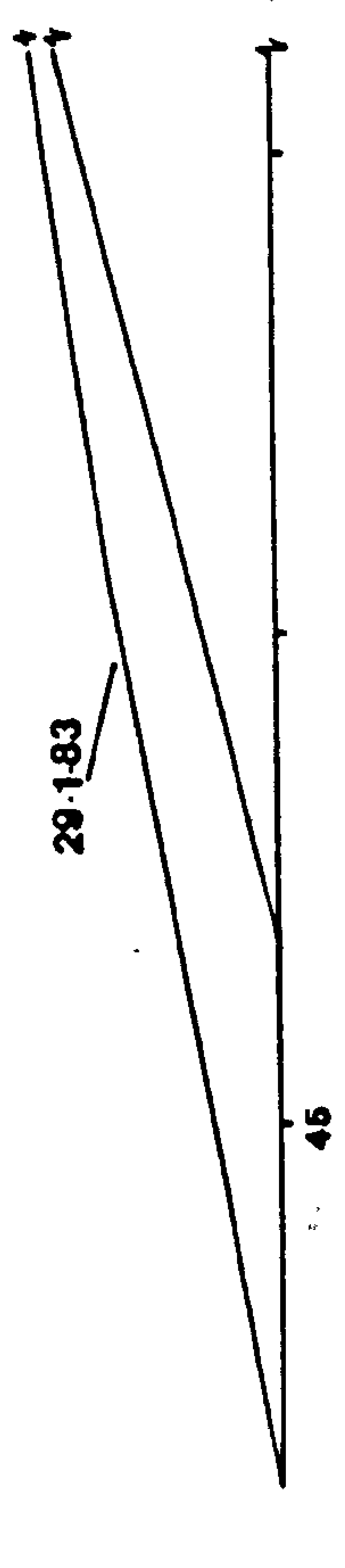
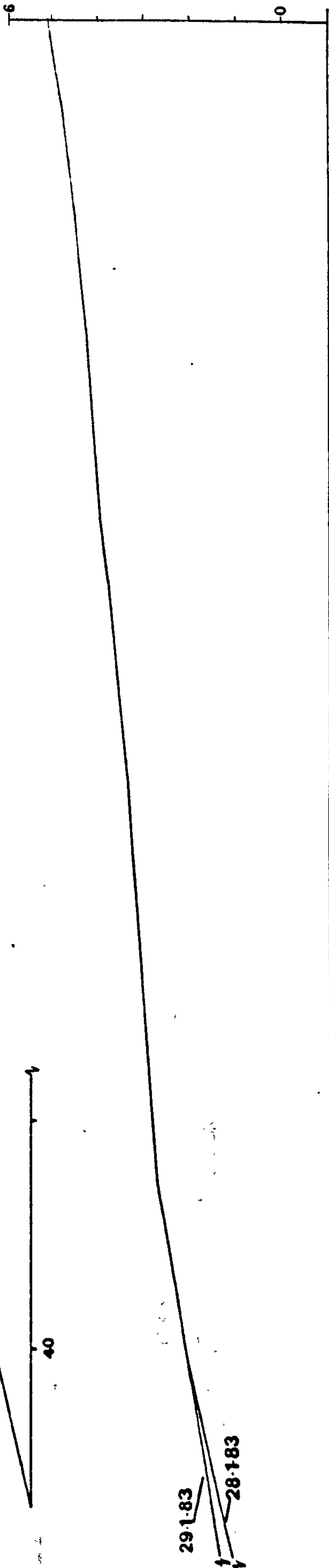
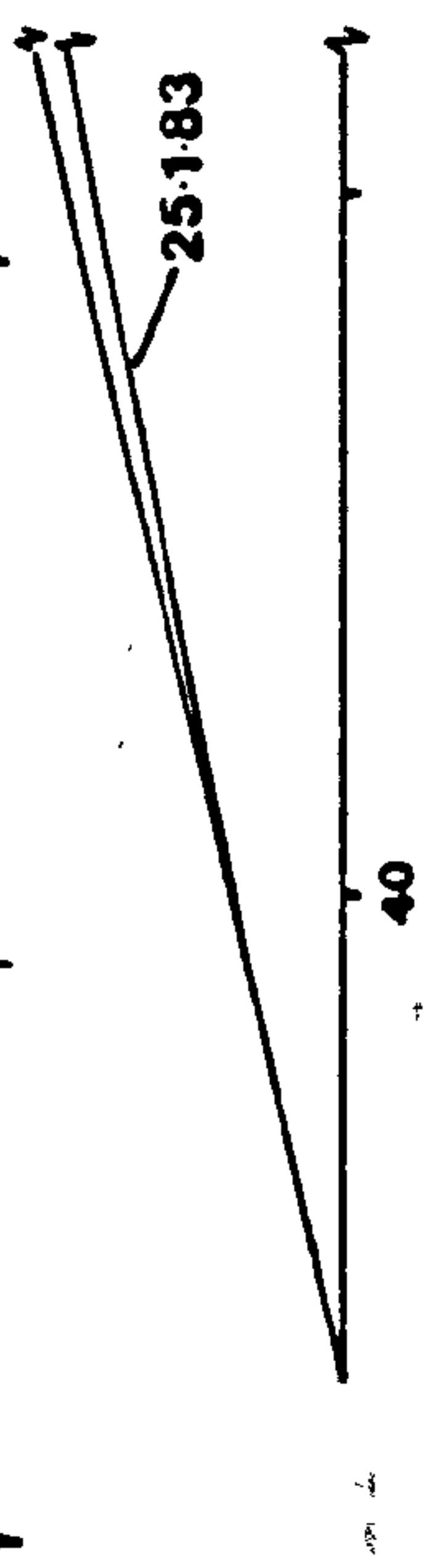
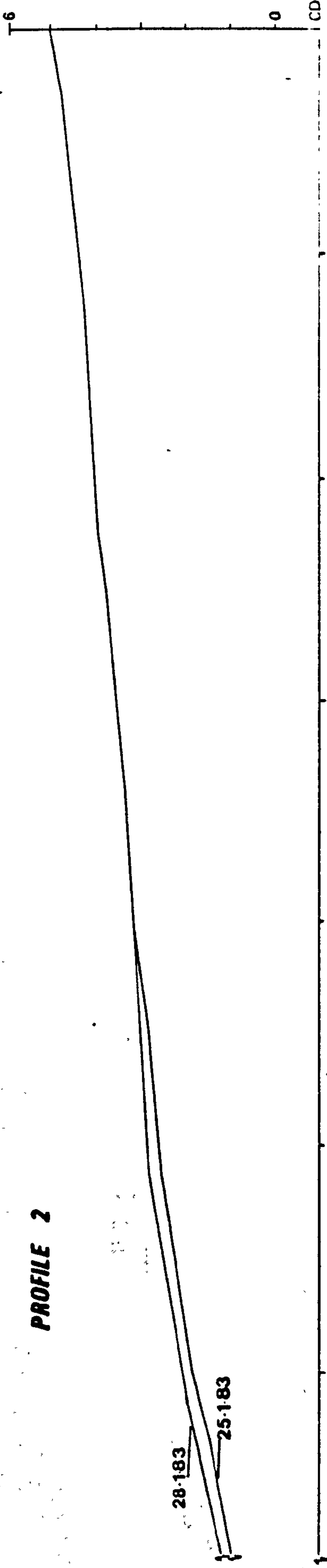
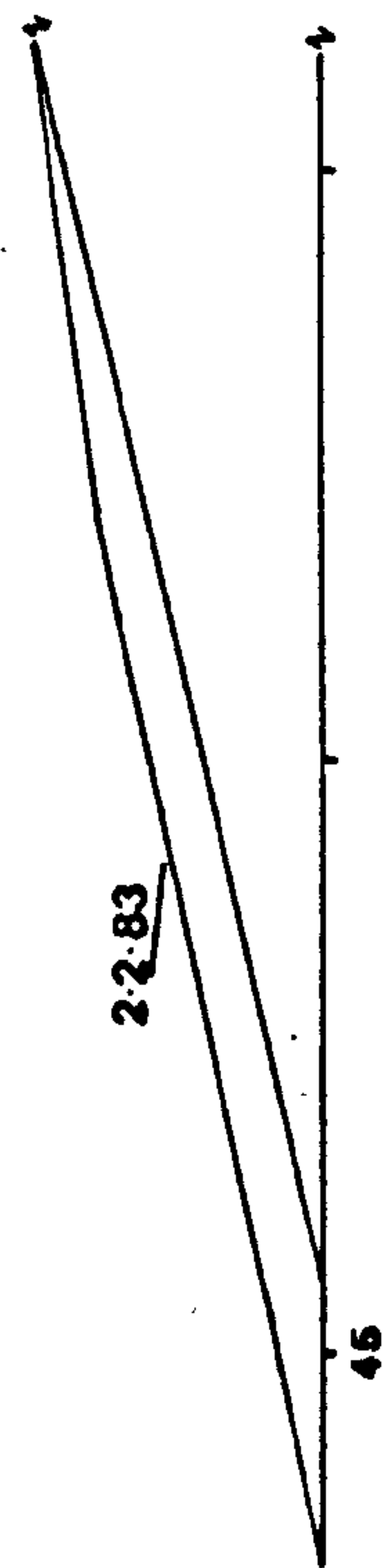
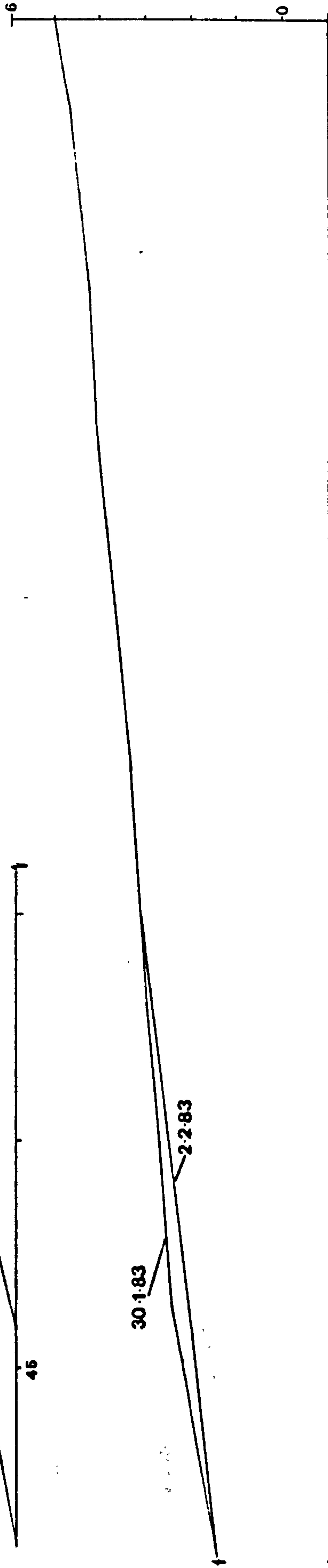
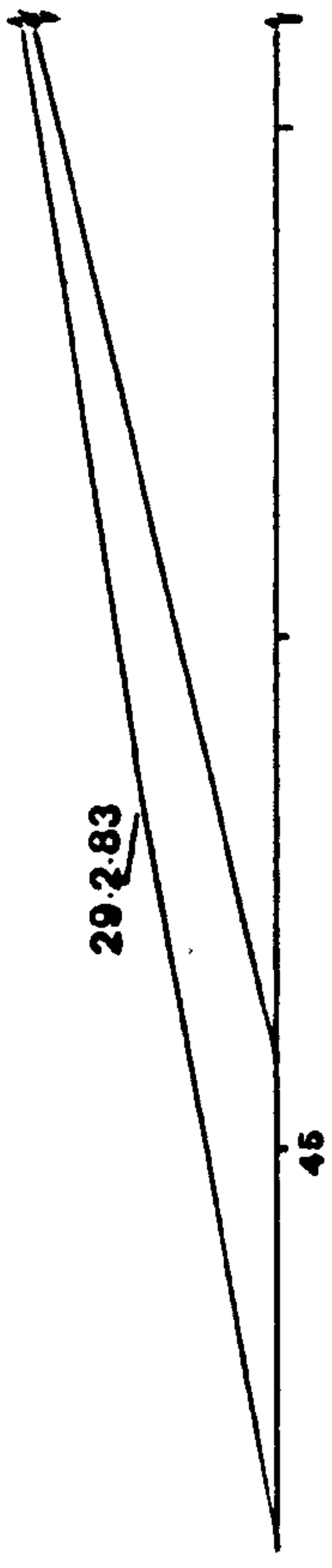
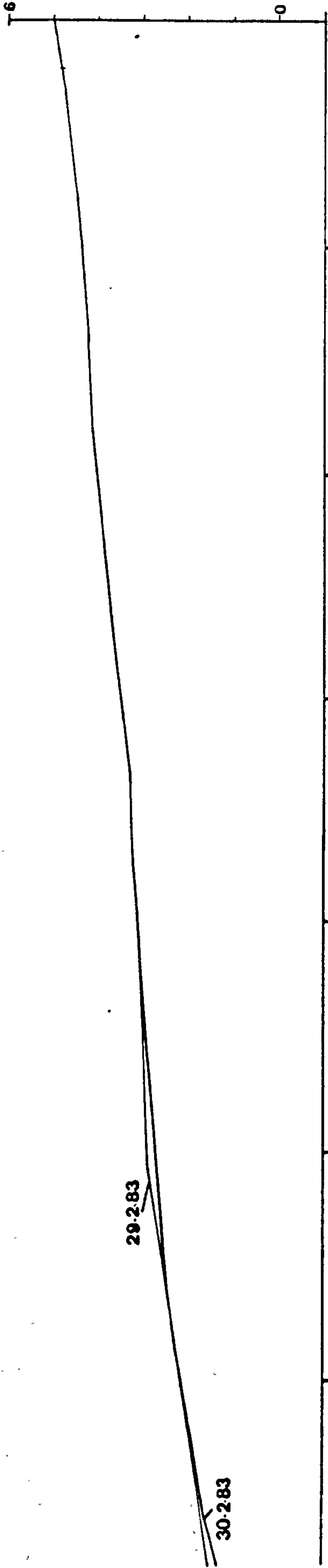


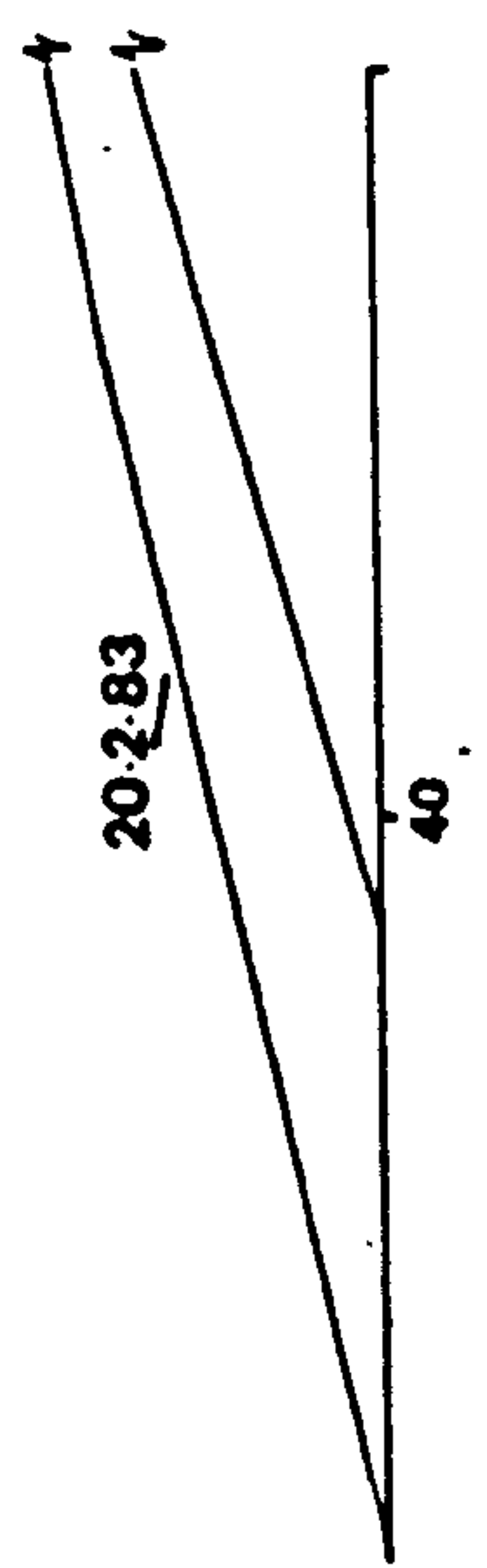
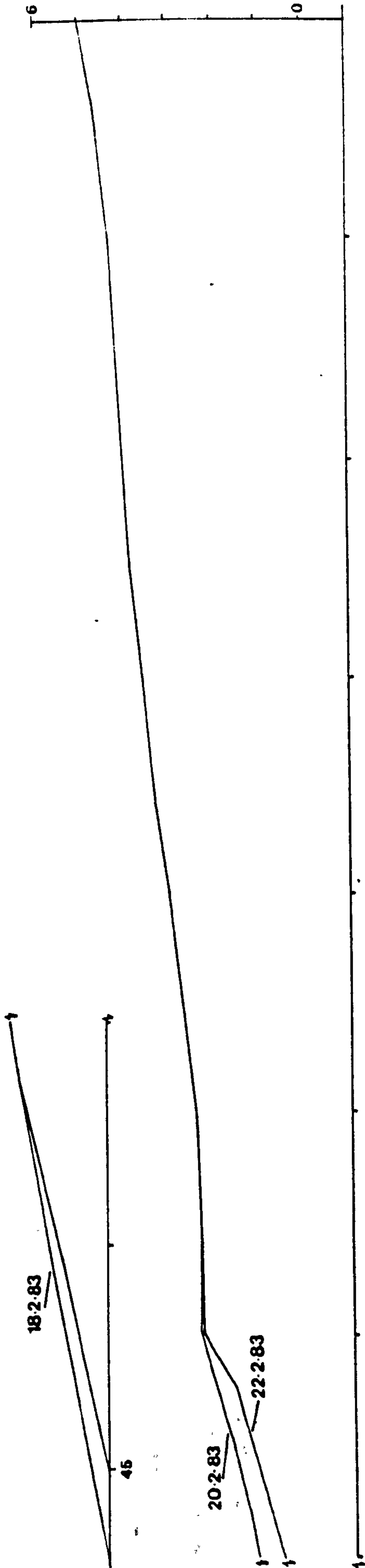
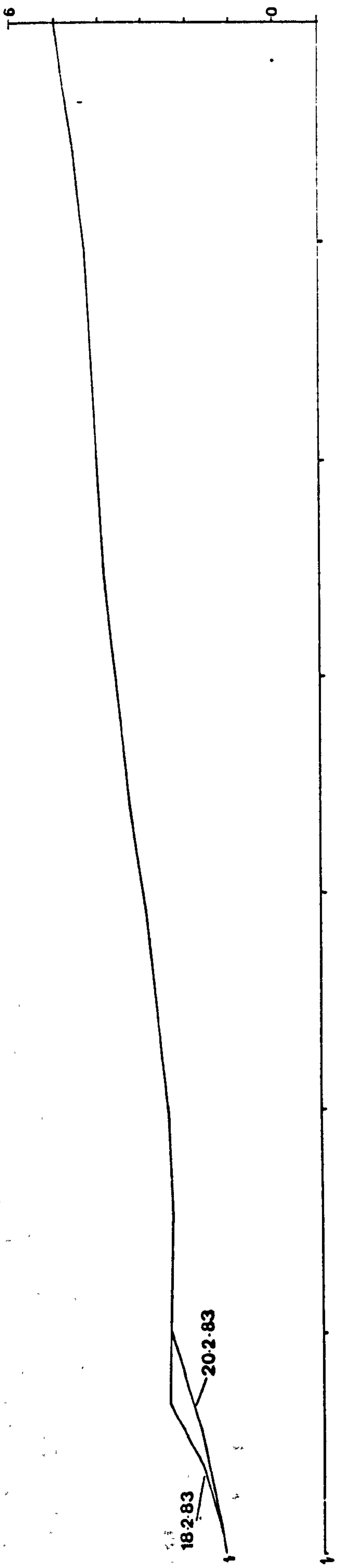
Figure 2



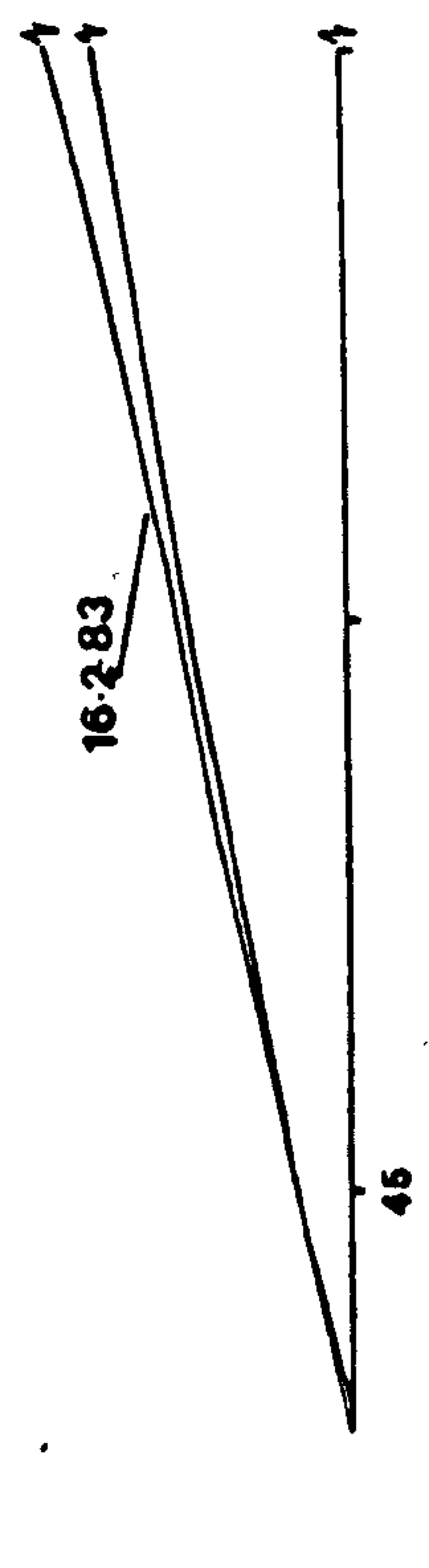
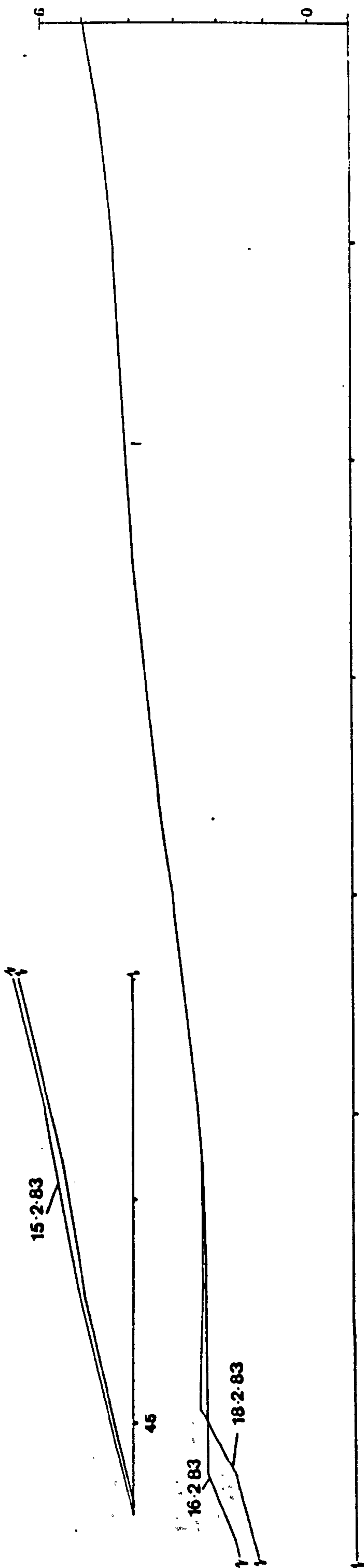
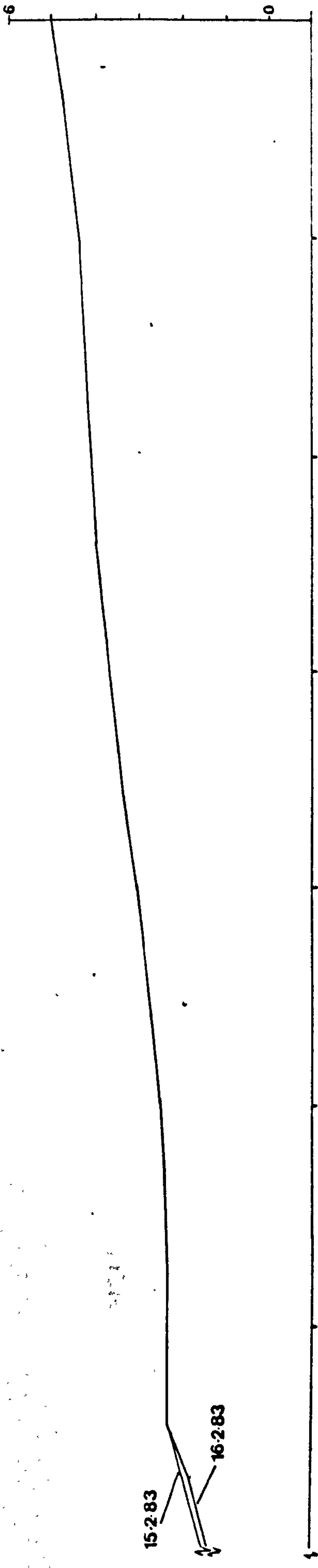
**PROFILE 2**

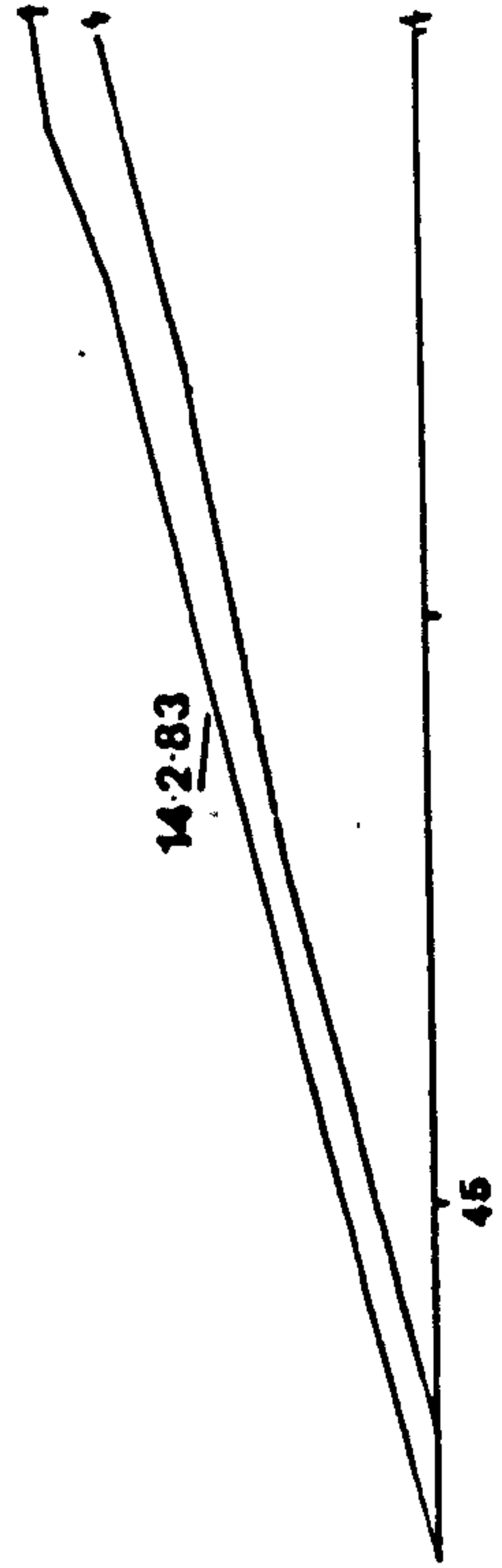
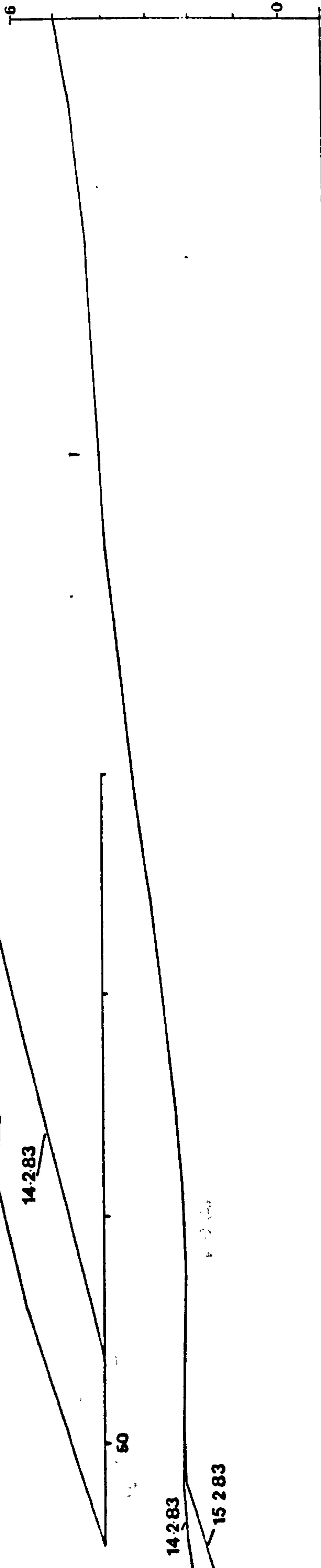
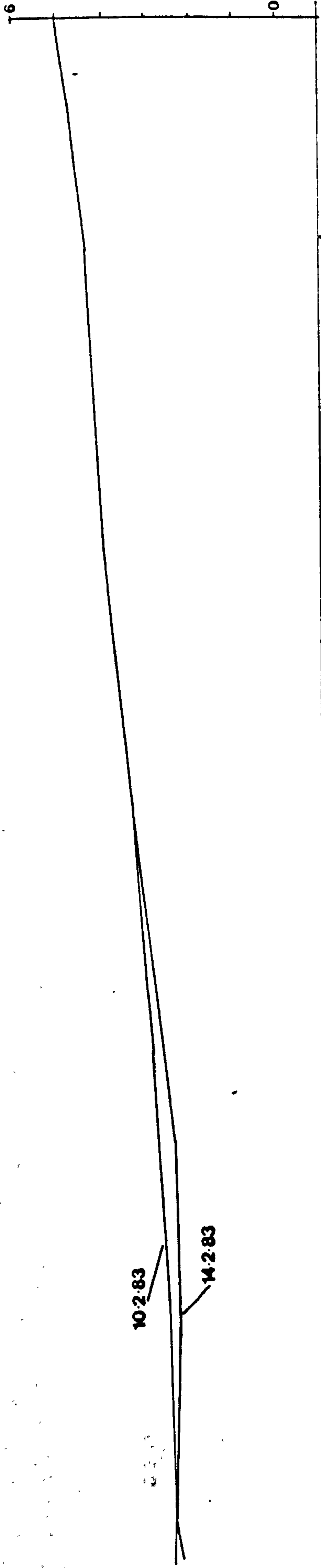


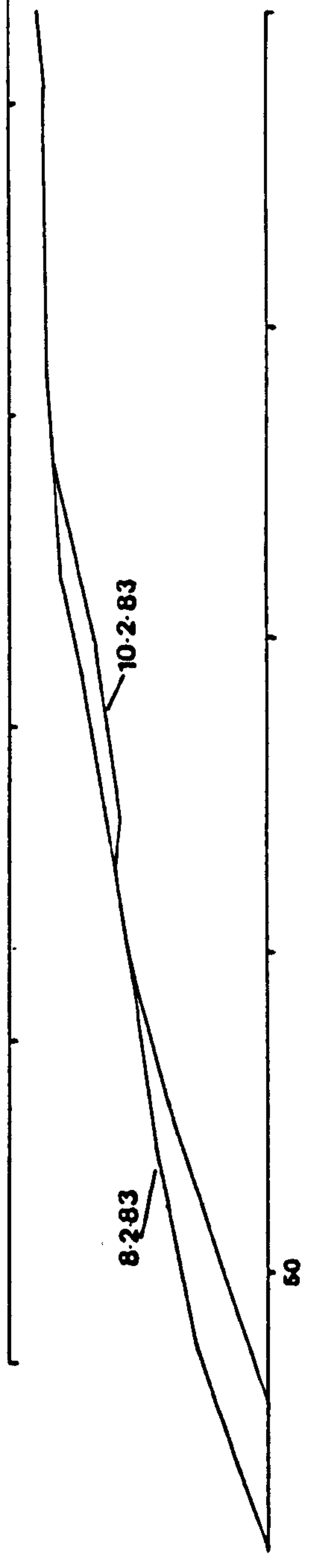
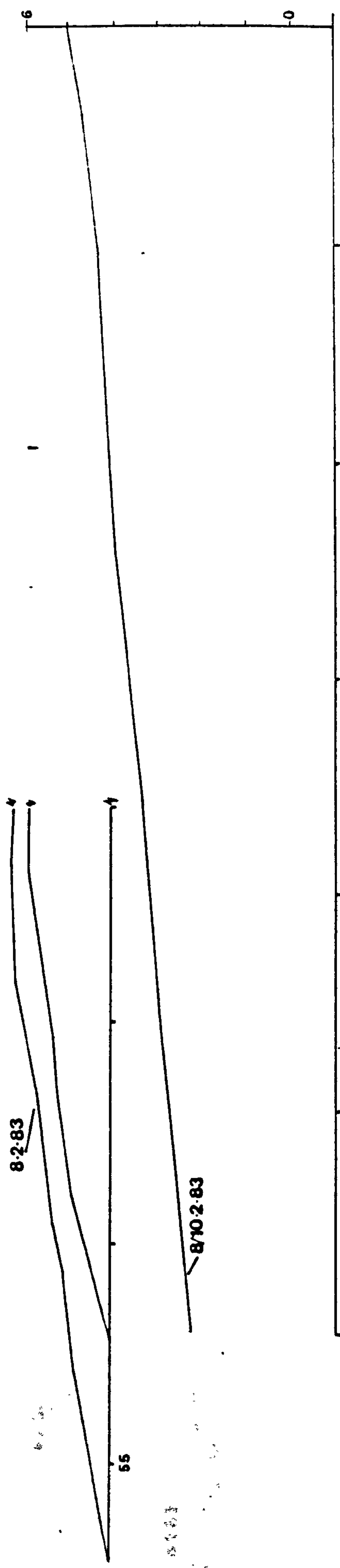
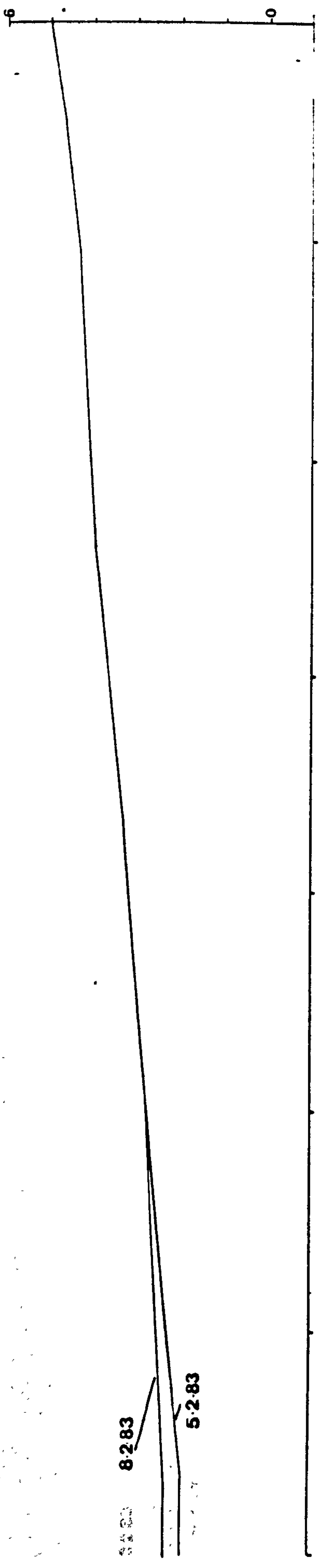












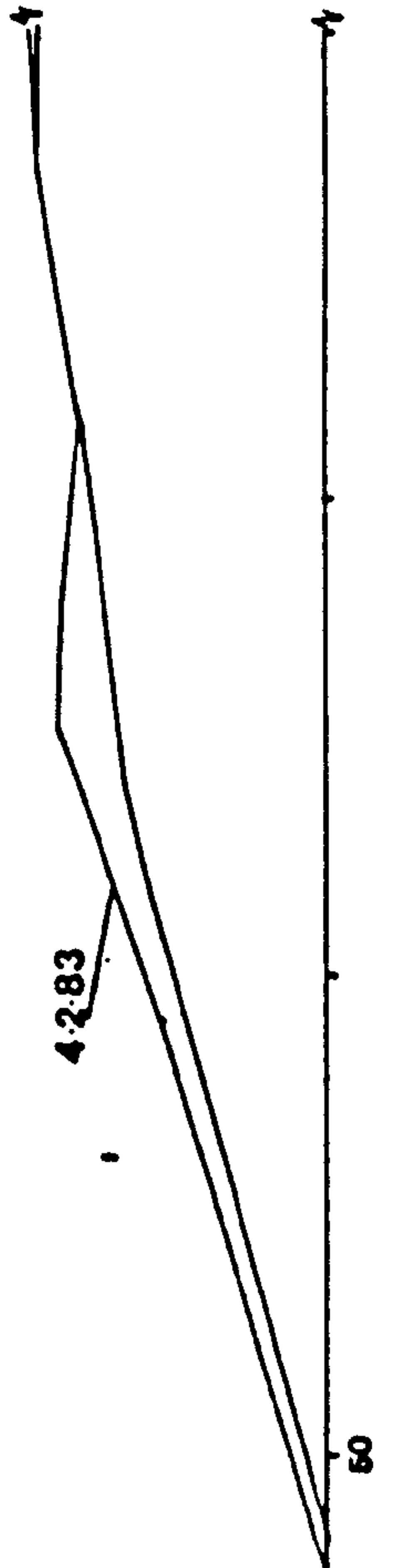
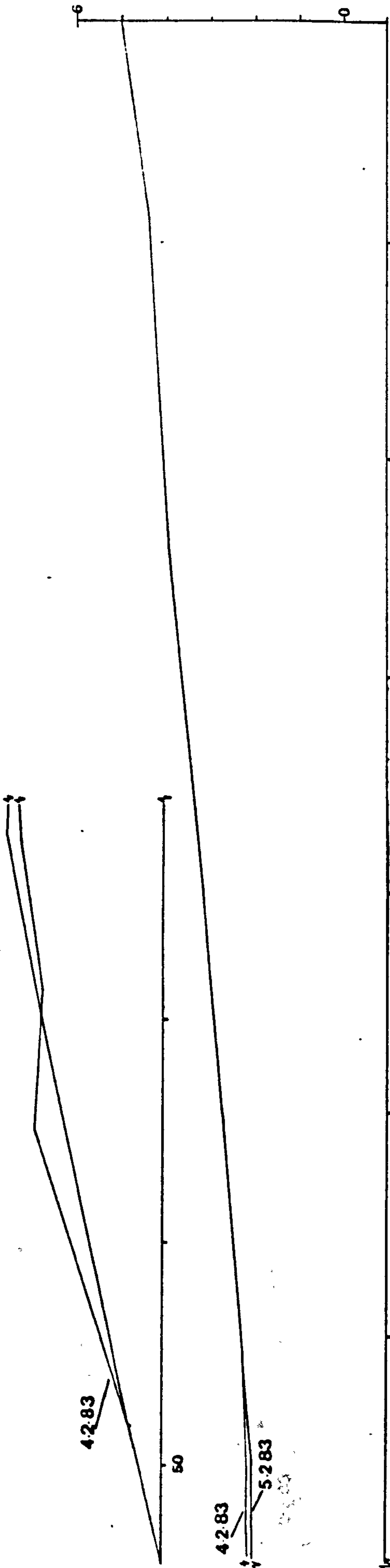
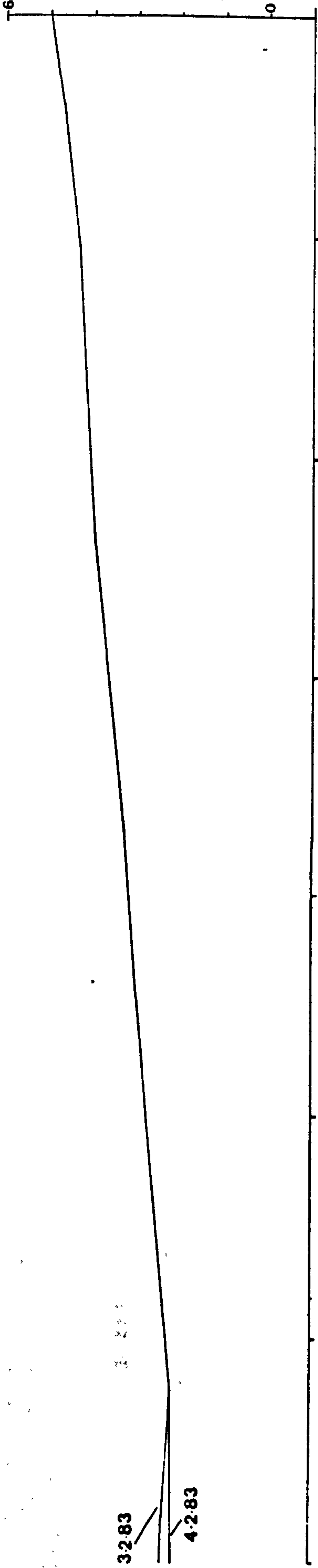
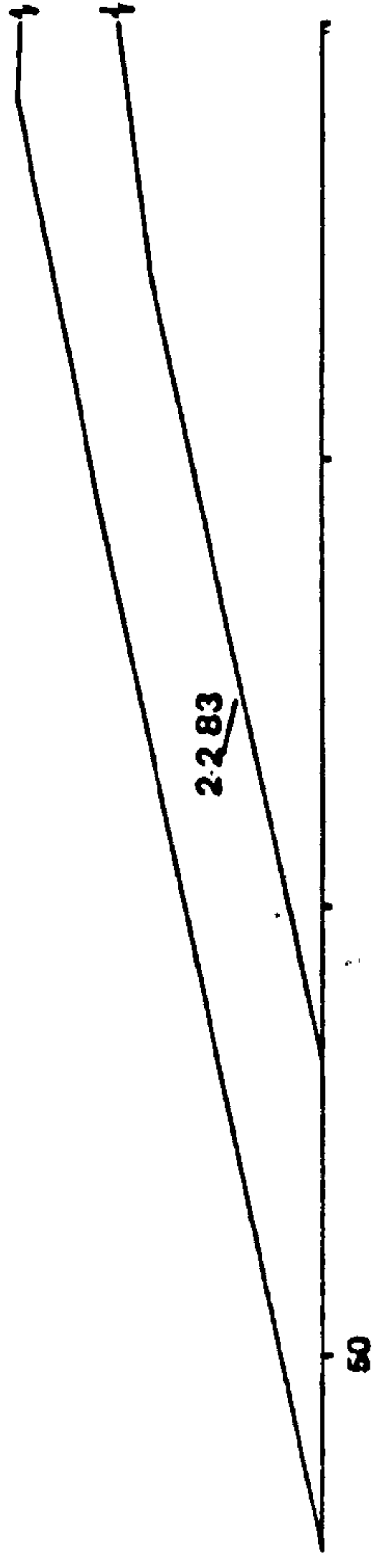
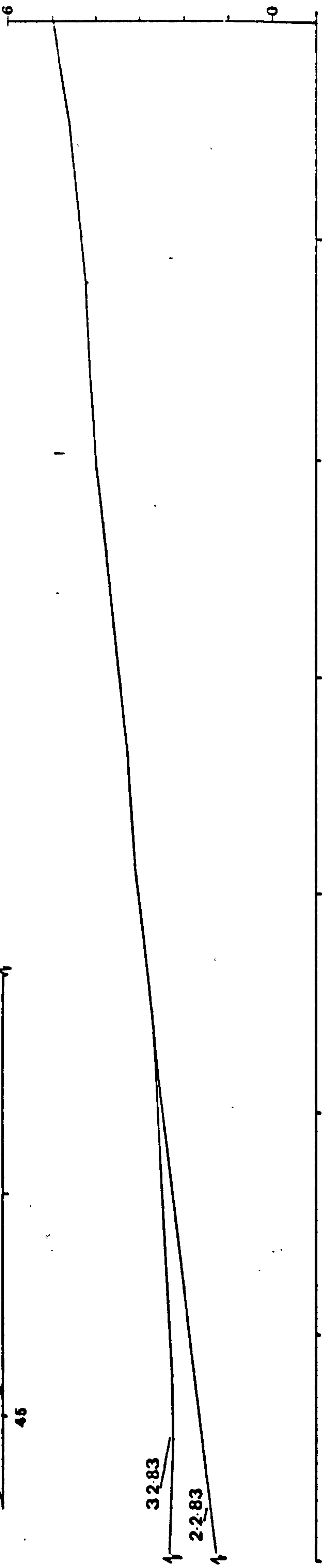
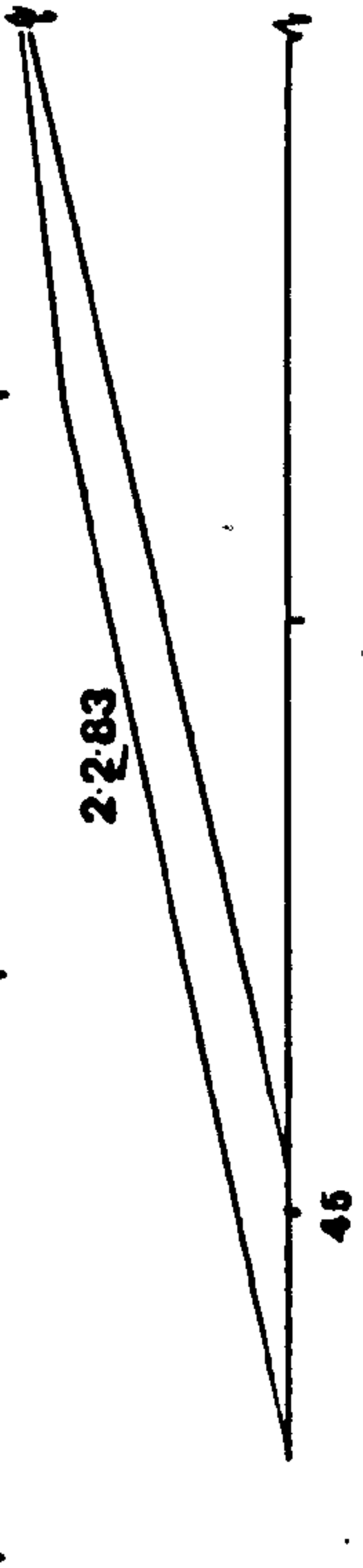
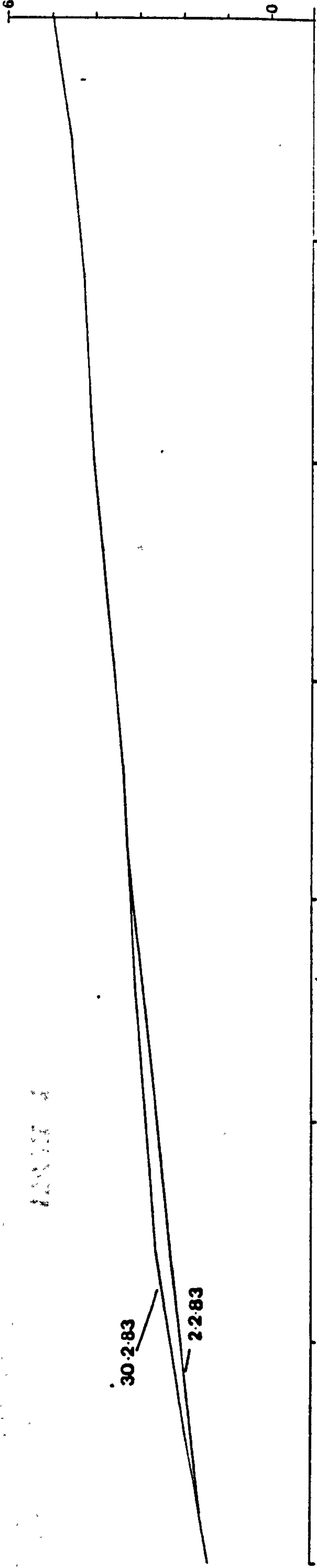
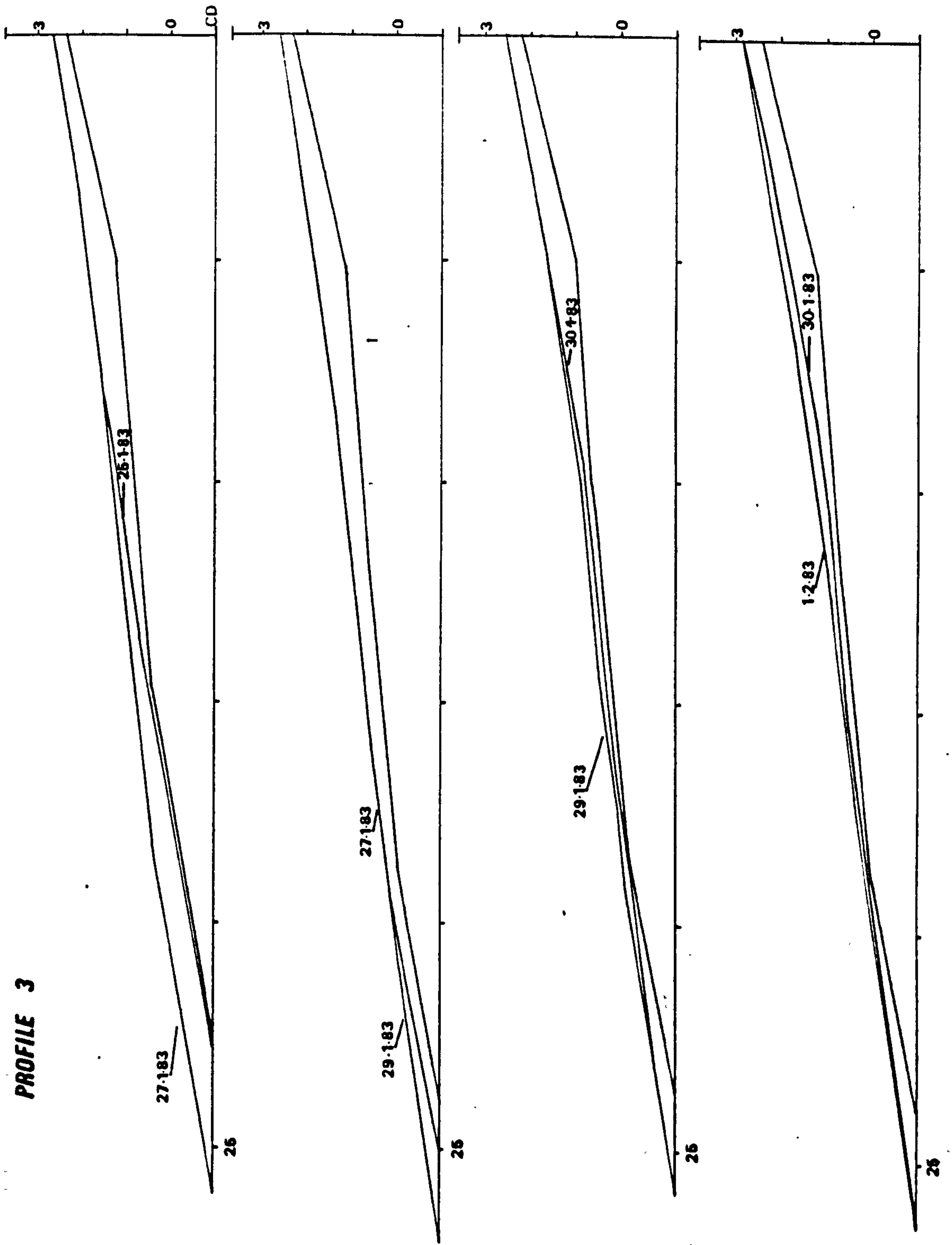


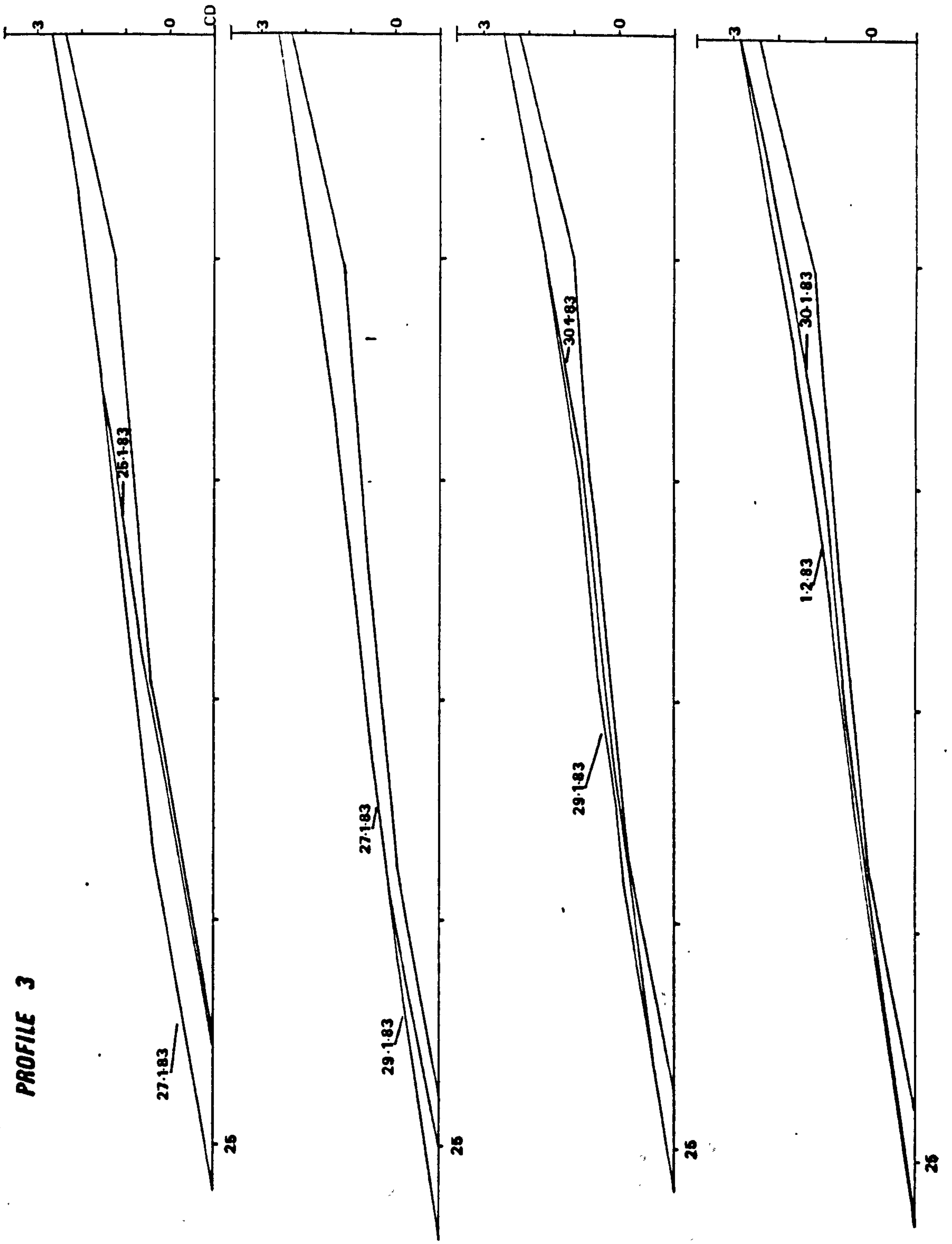
TABLE 4

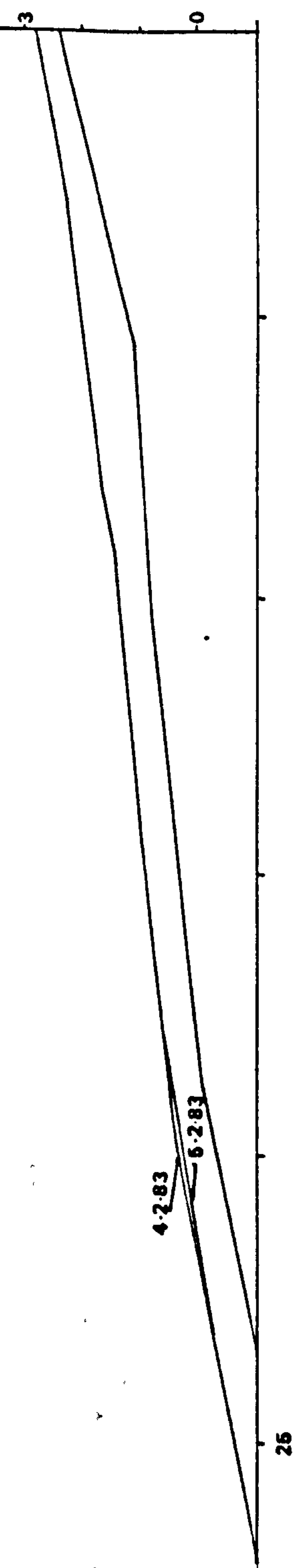
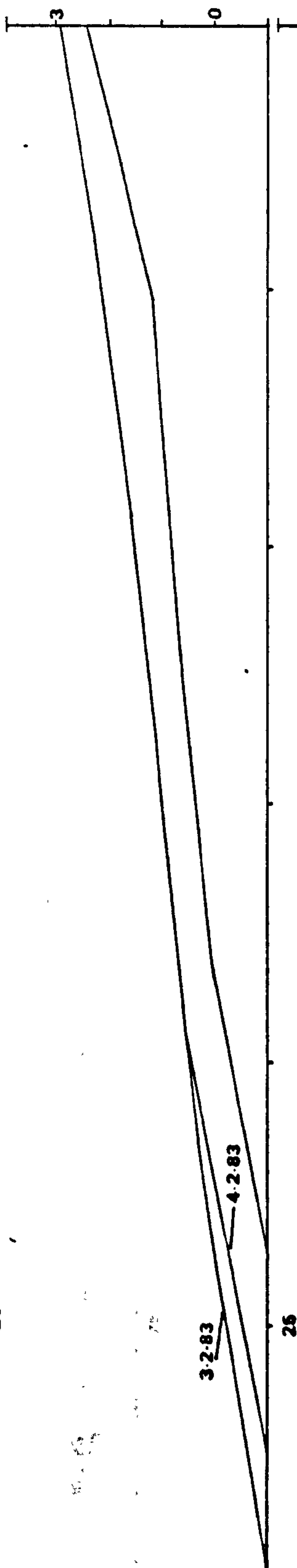
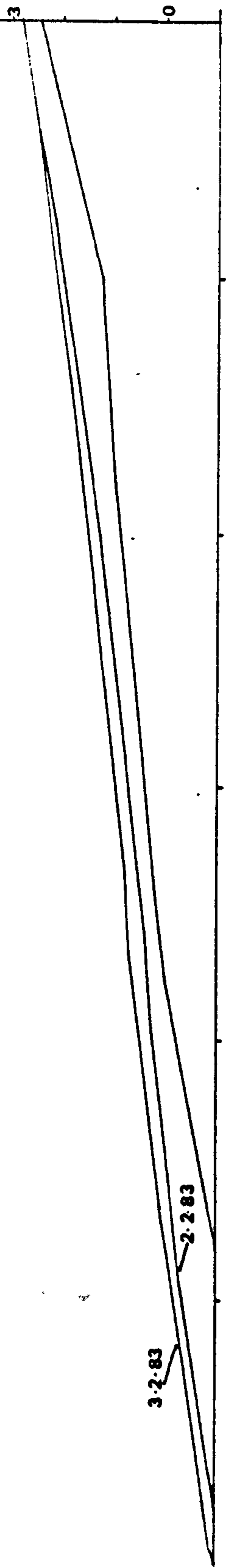
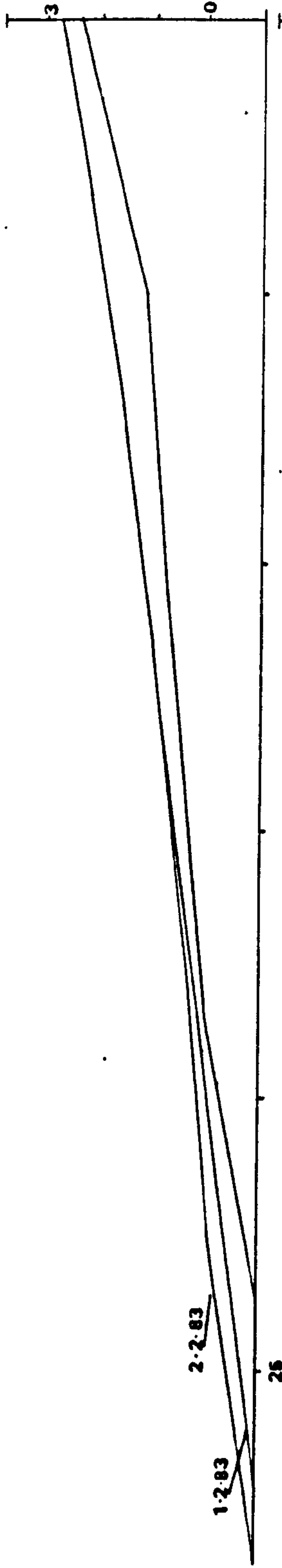


**PROFILE 3**

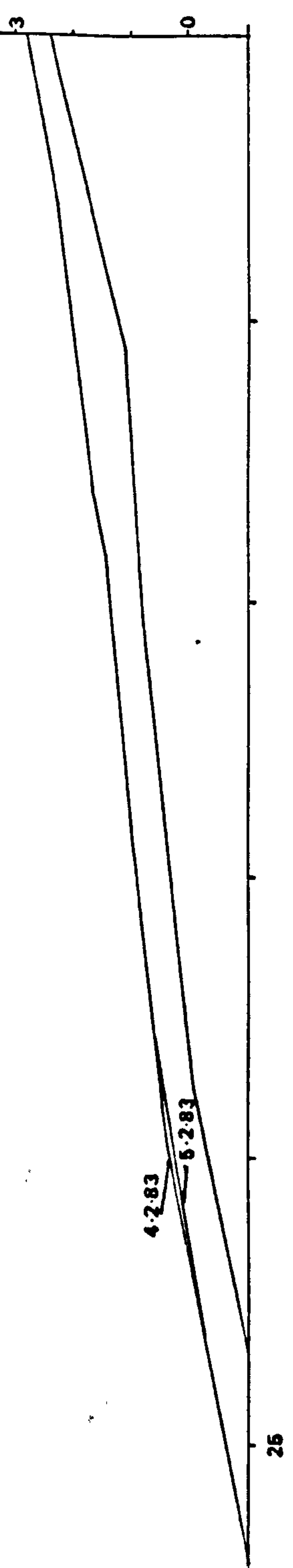
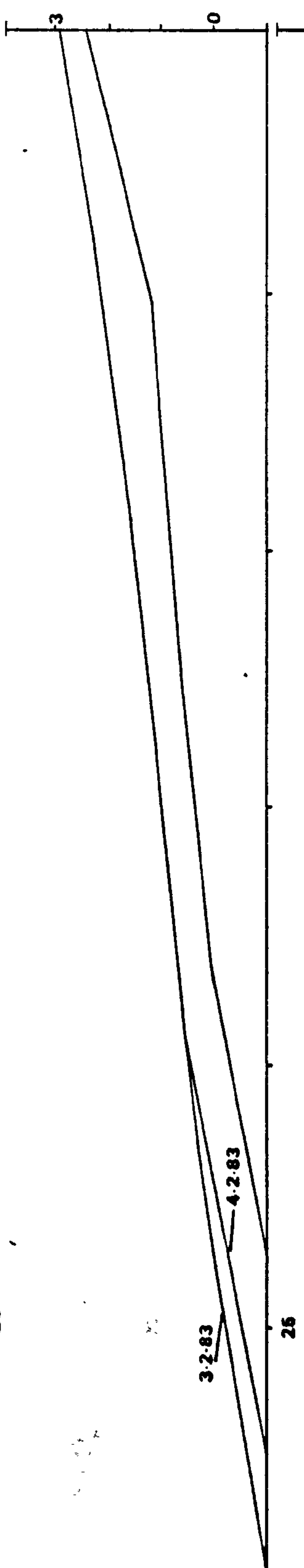
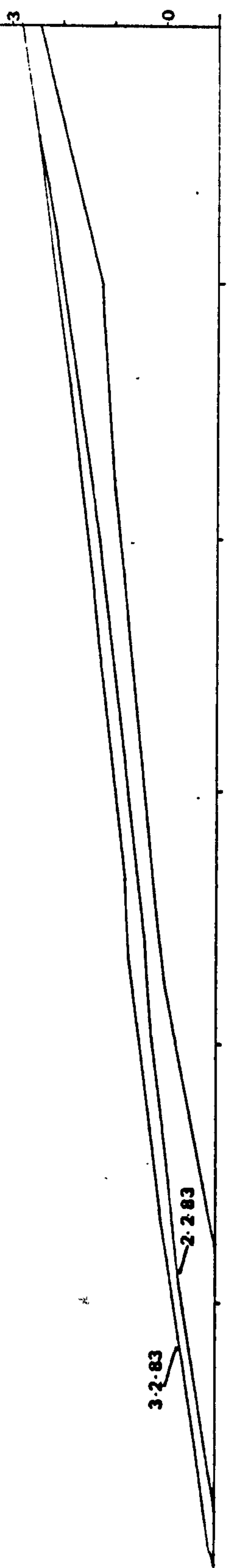
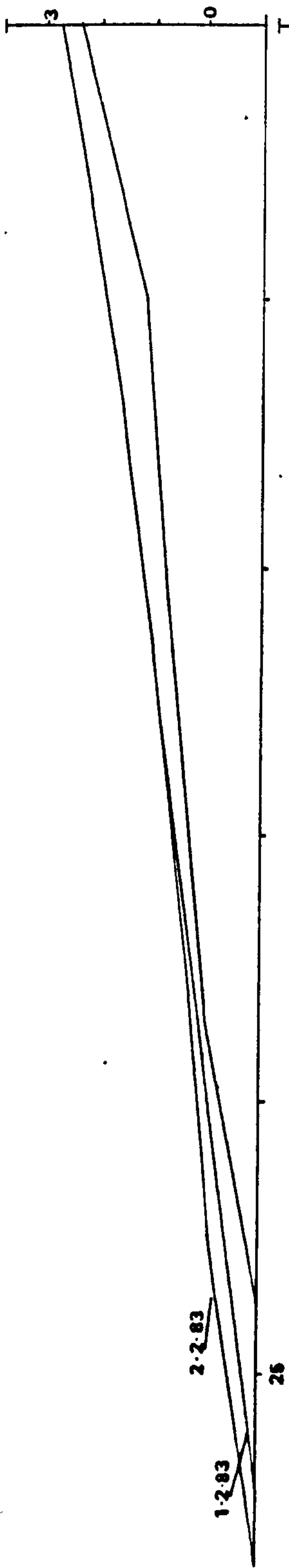


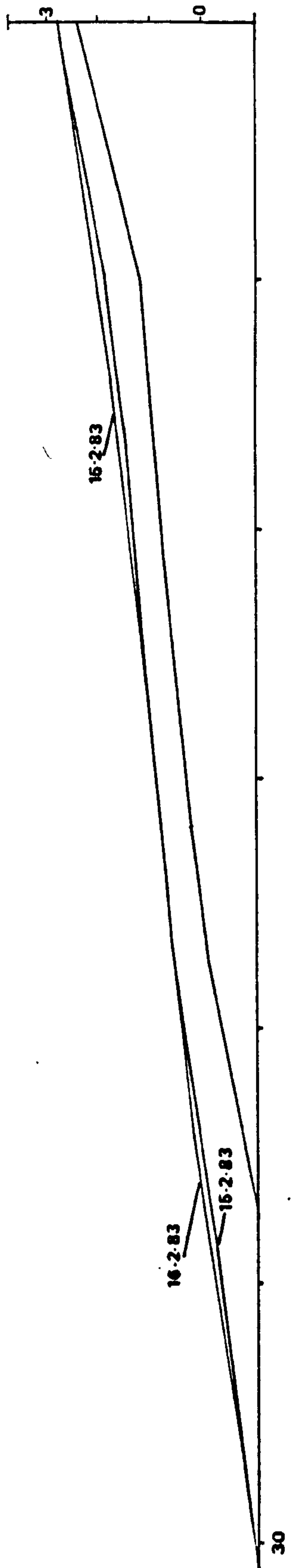
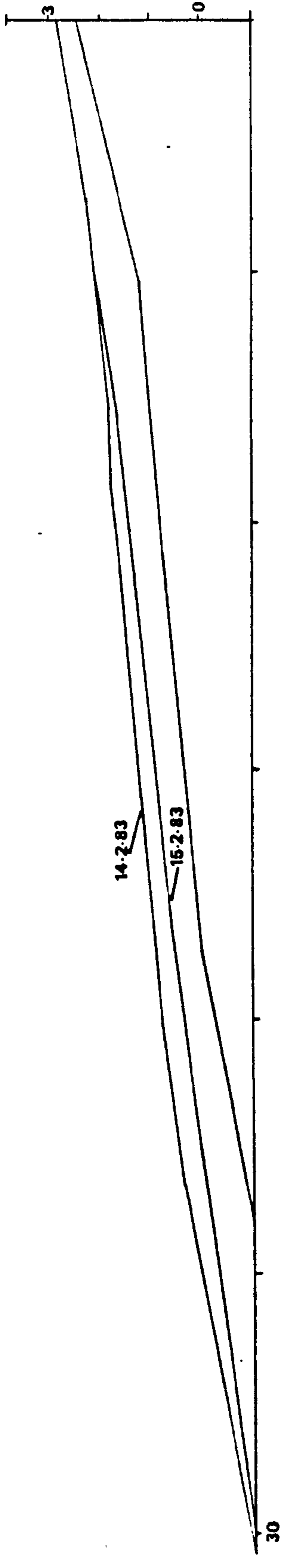
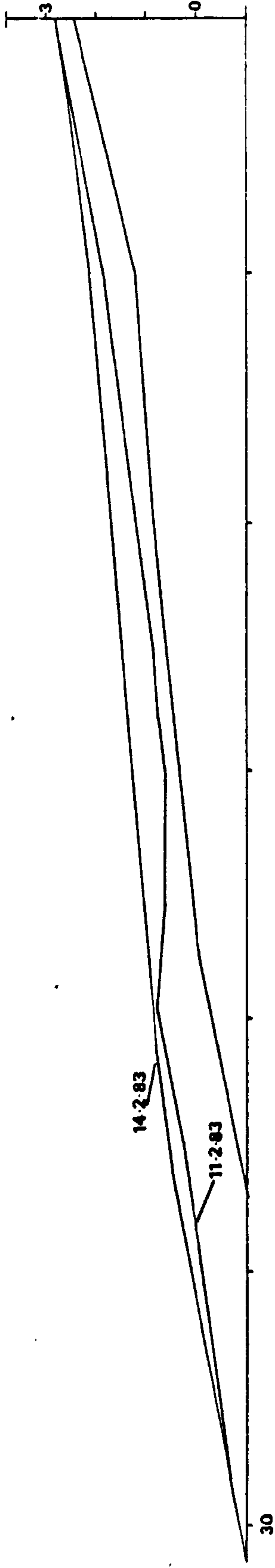
**PROFILE 3**

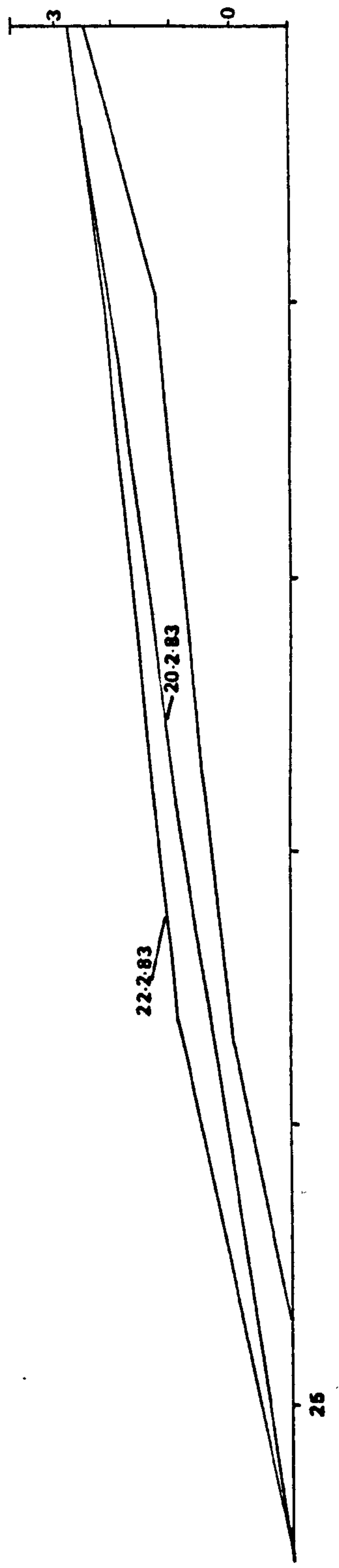
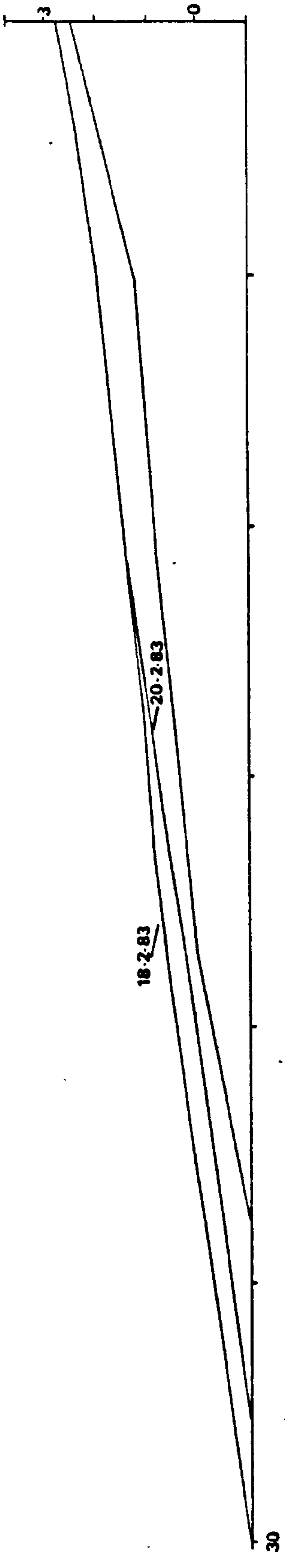
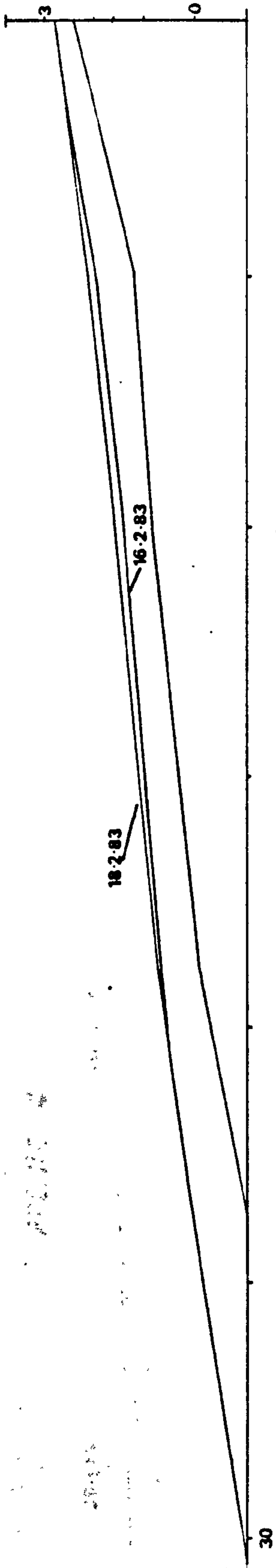




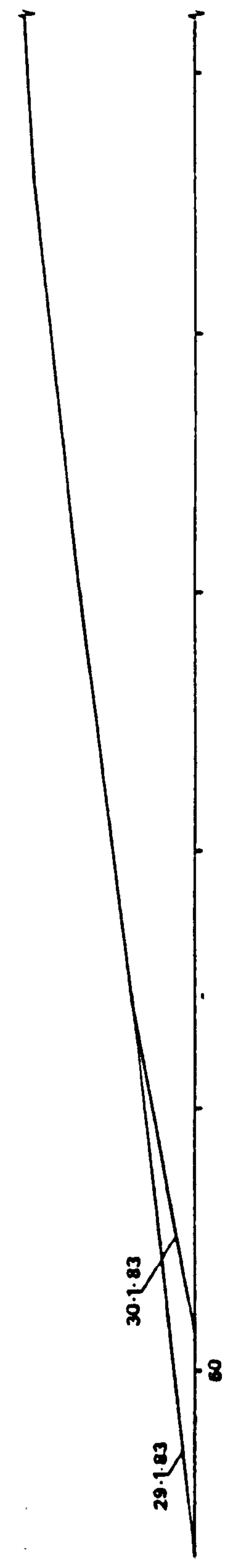
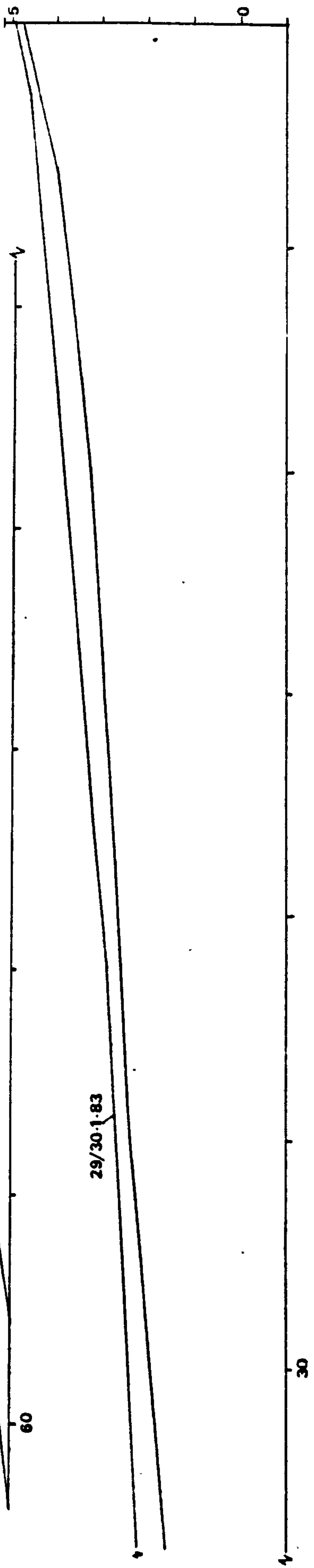
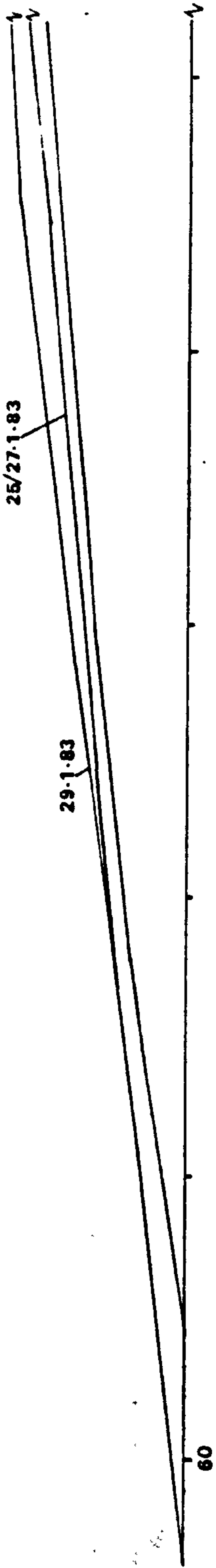
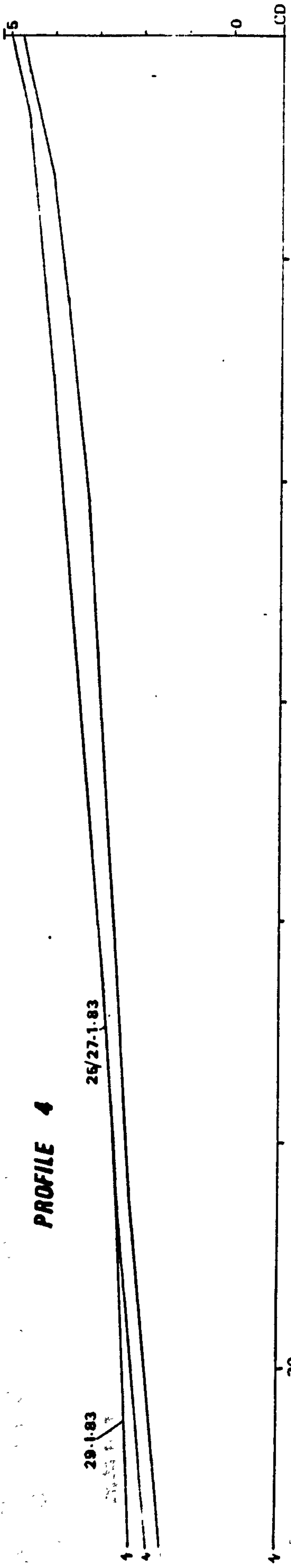


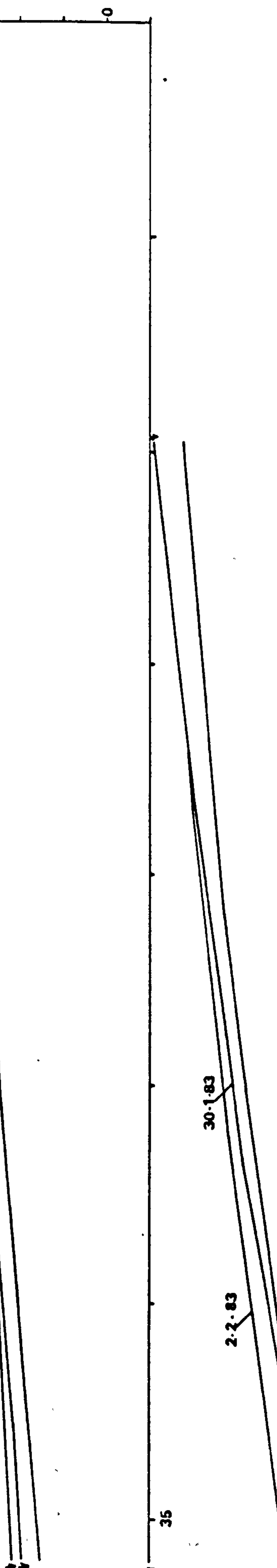
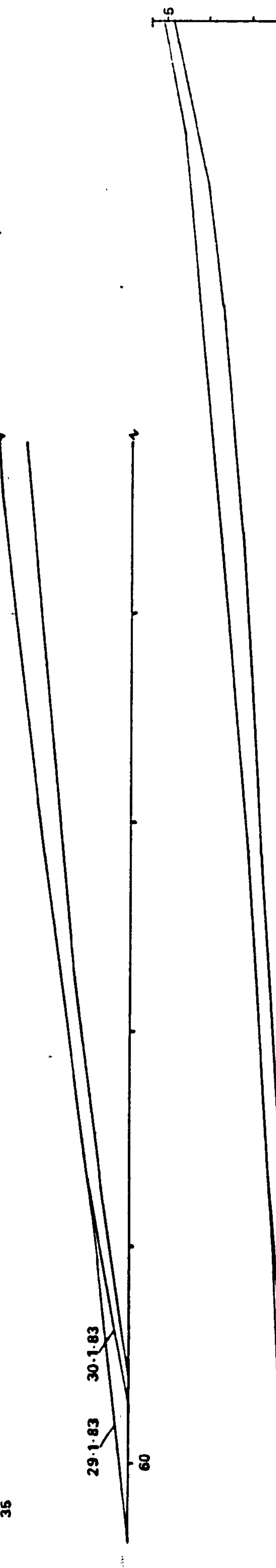
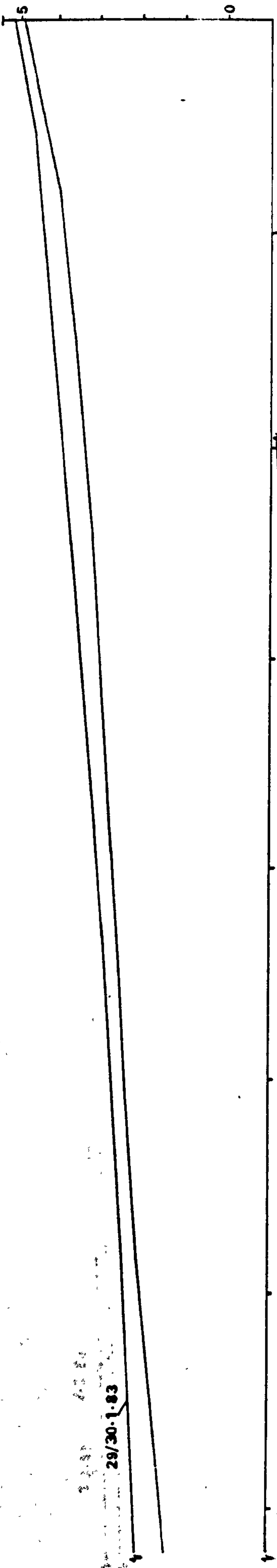


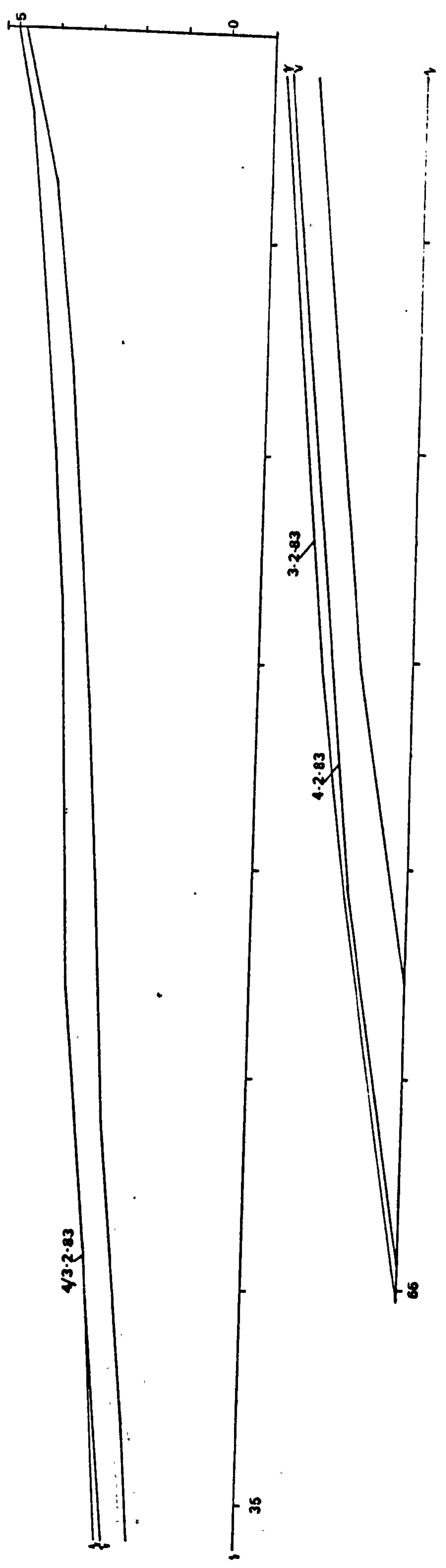
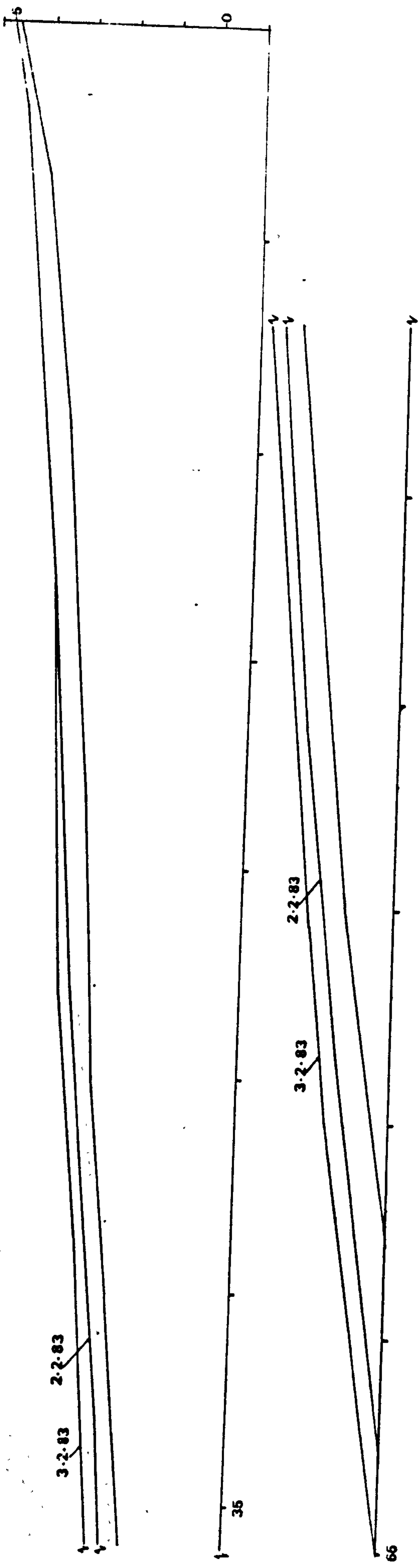


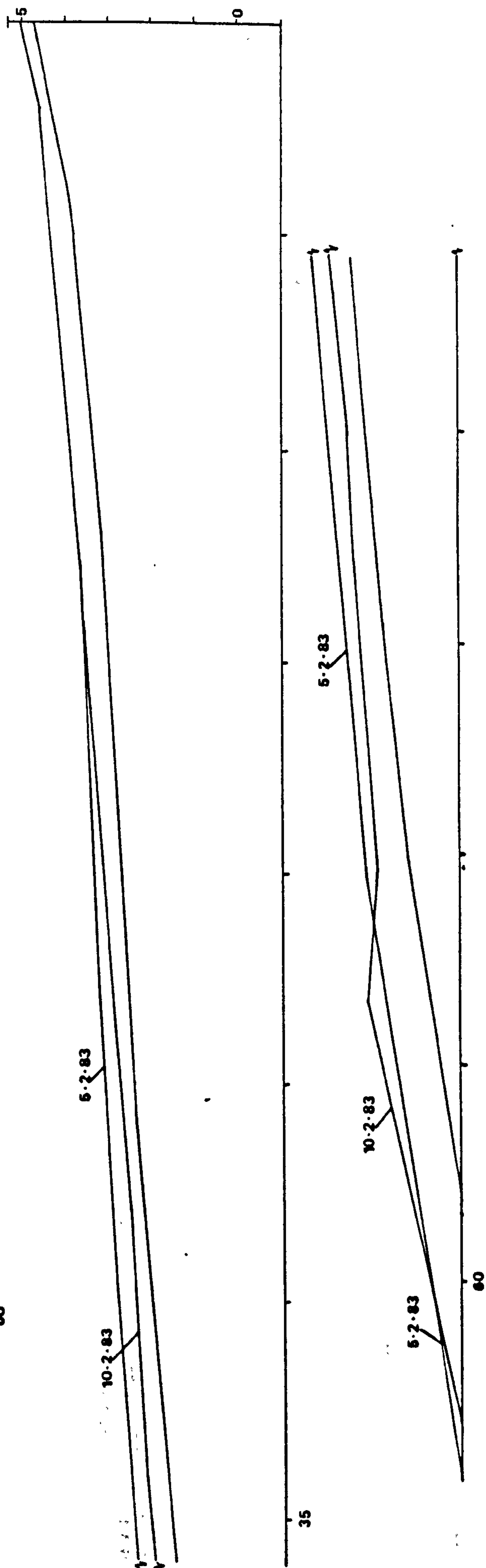
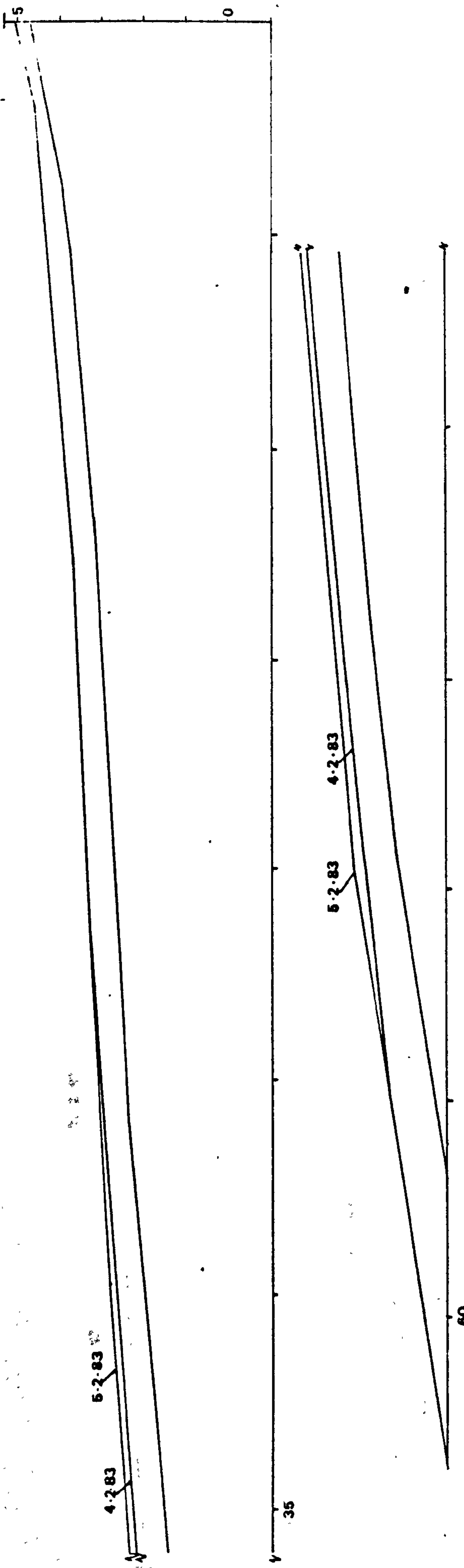


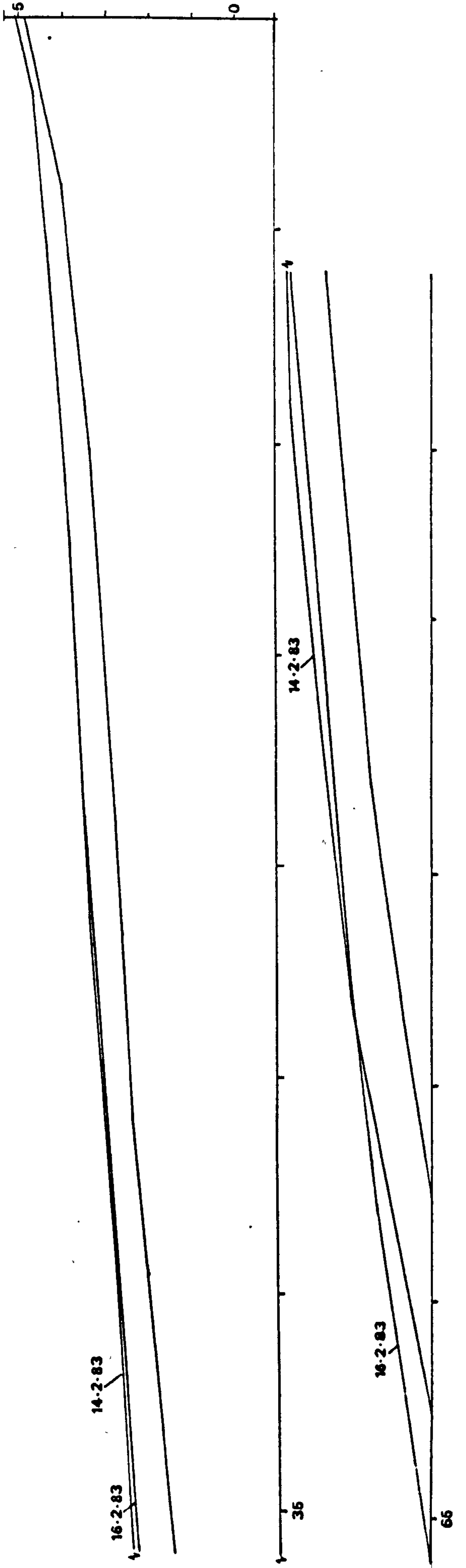
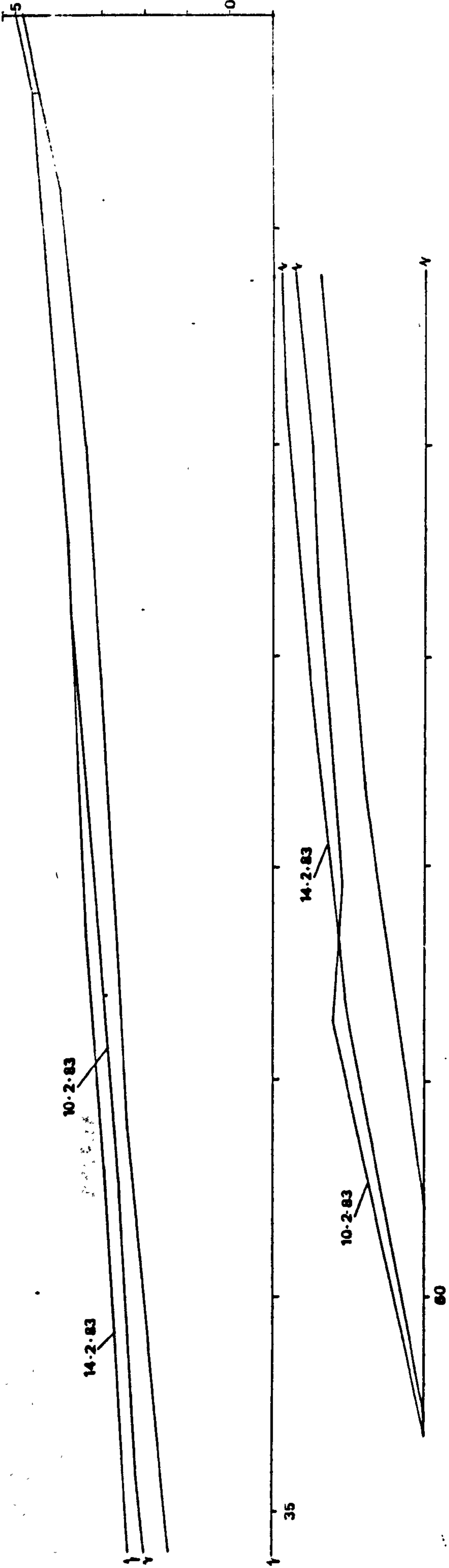
**PROFILE 4**





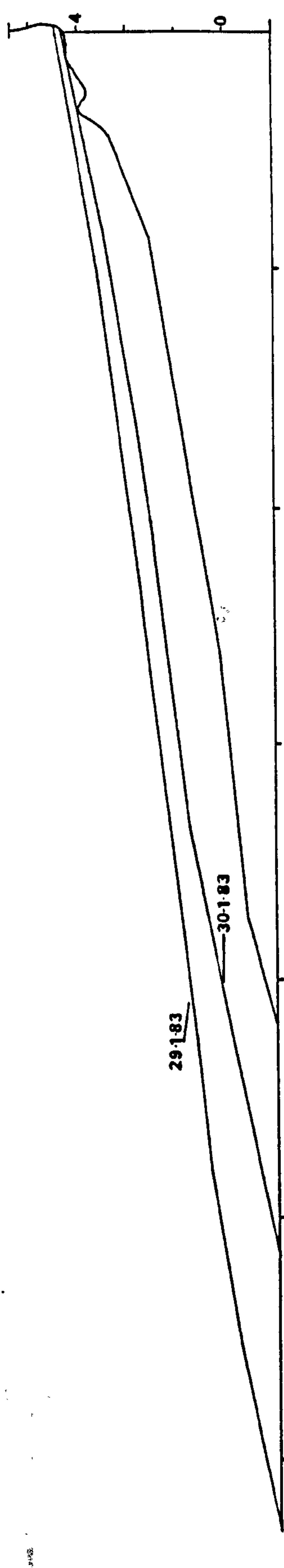
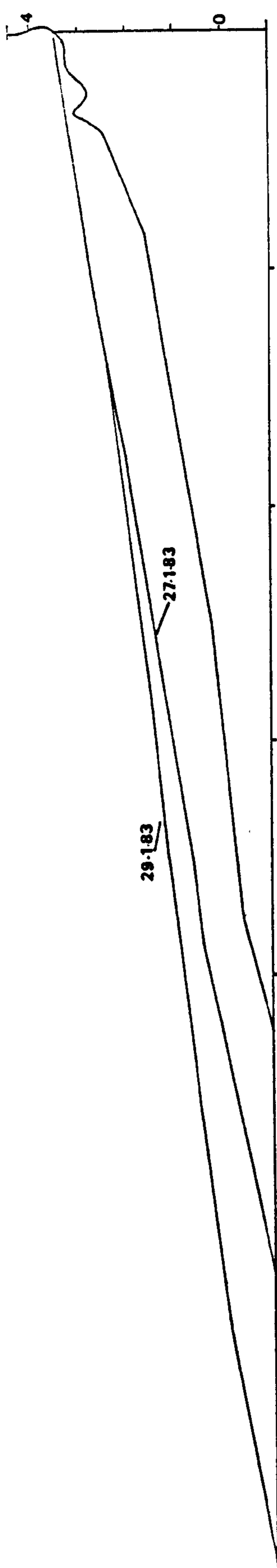
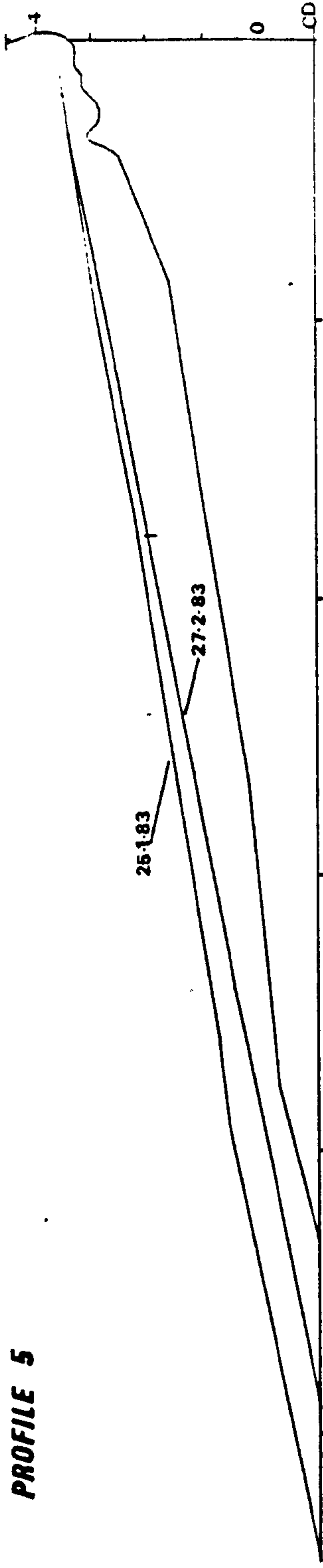


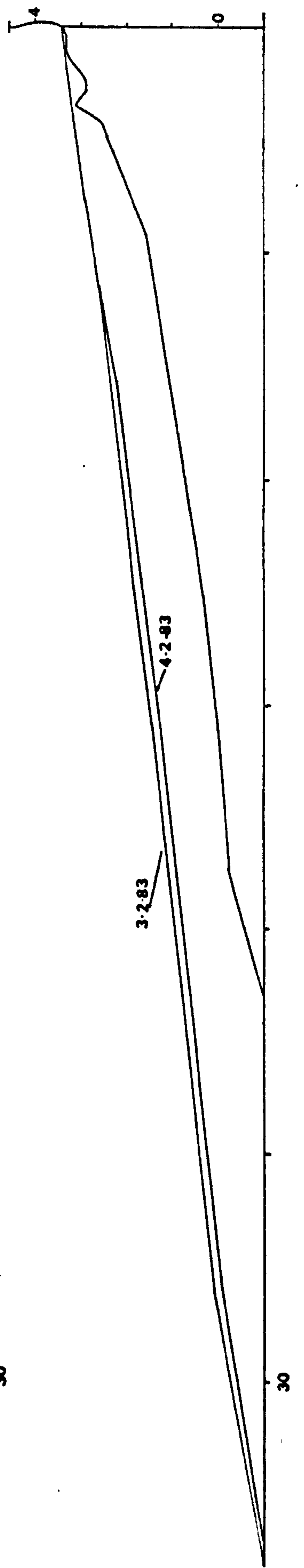
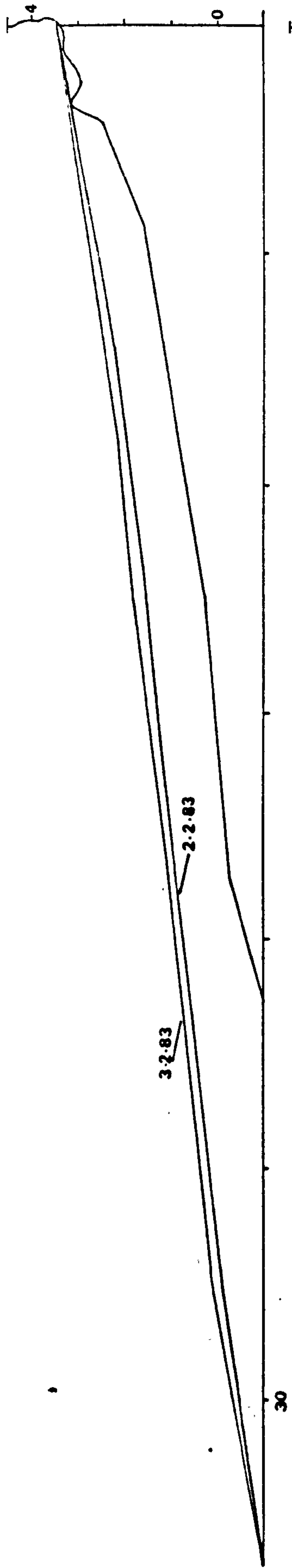
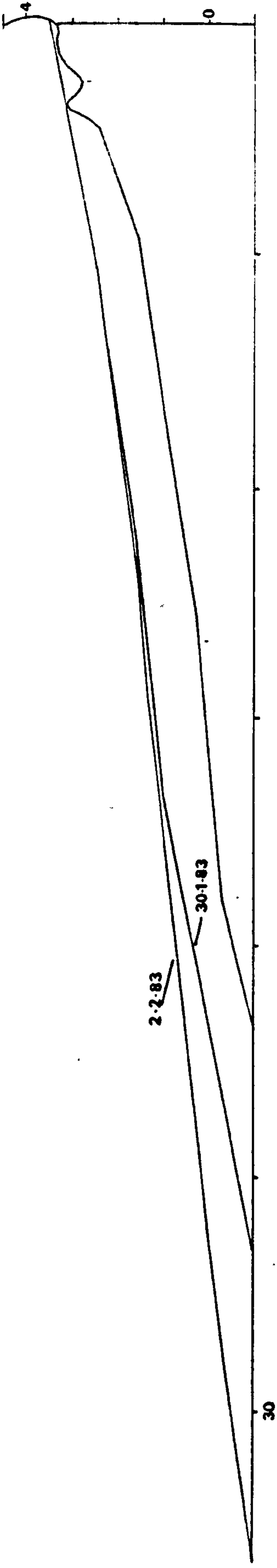


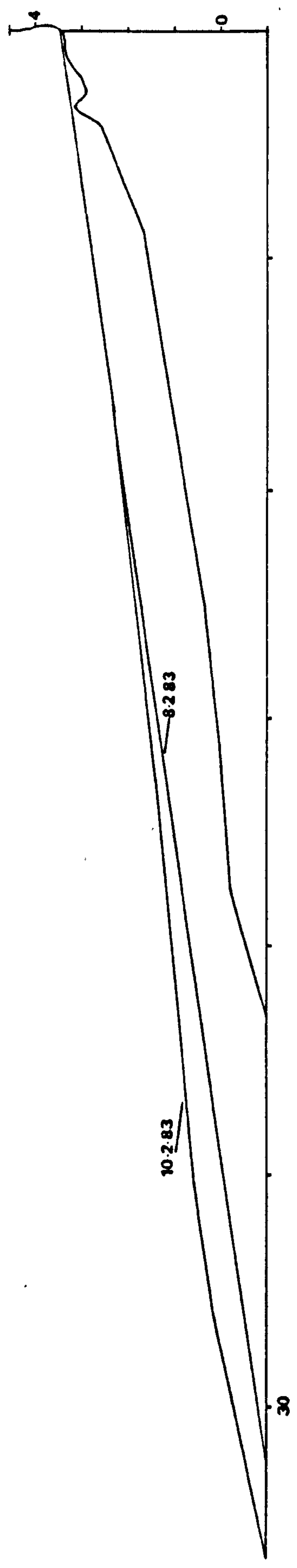
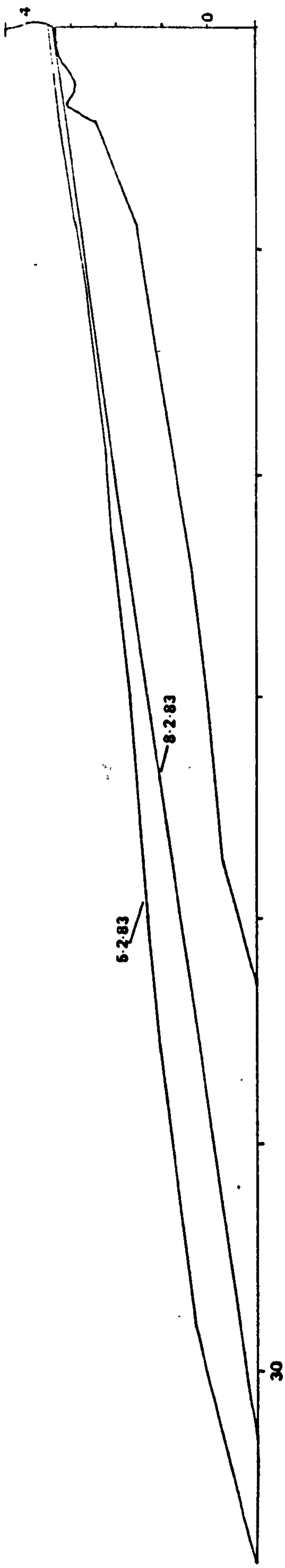
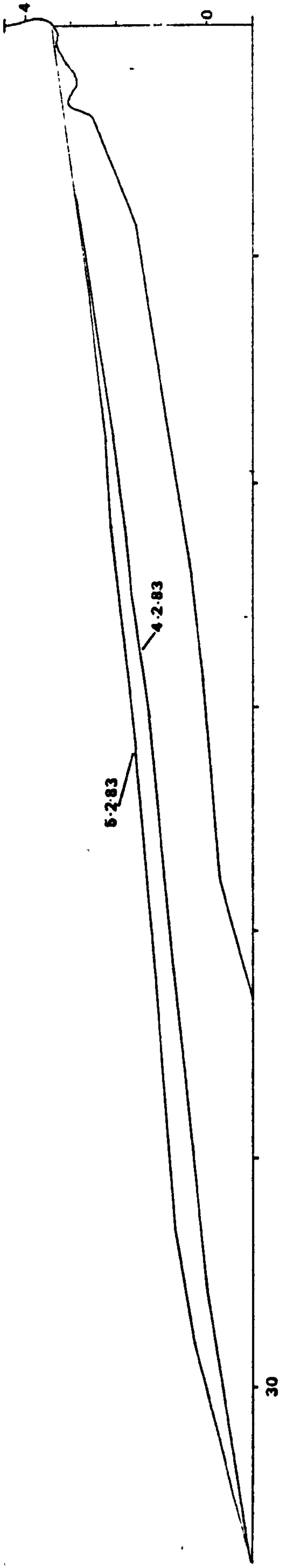




**PROFILE 5**







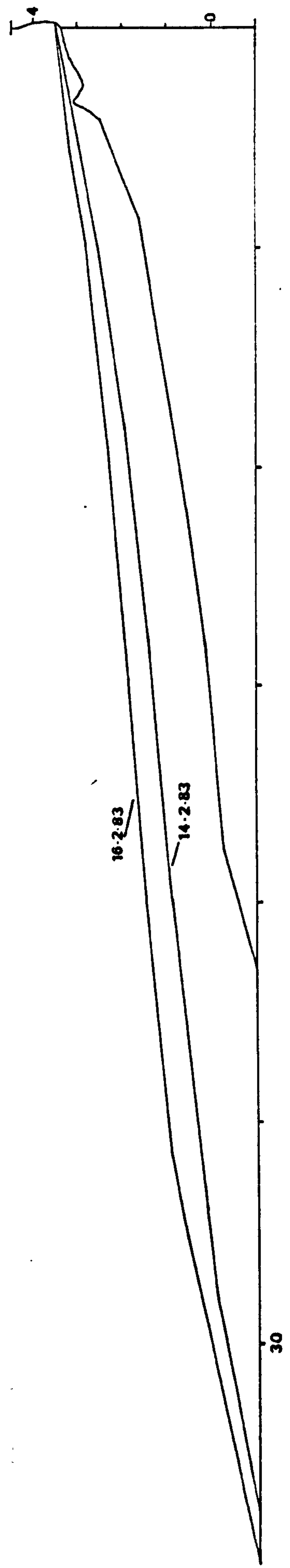
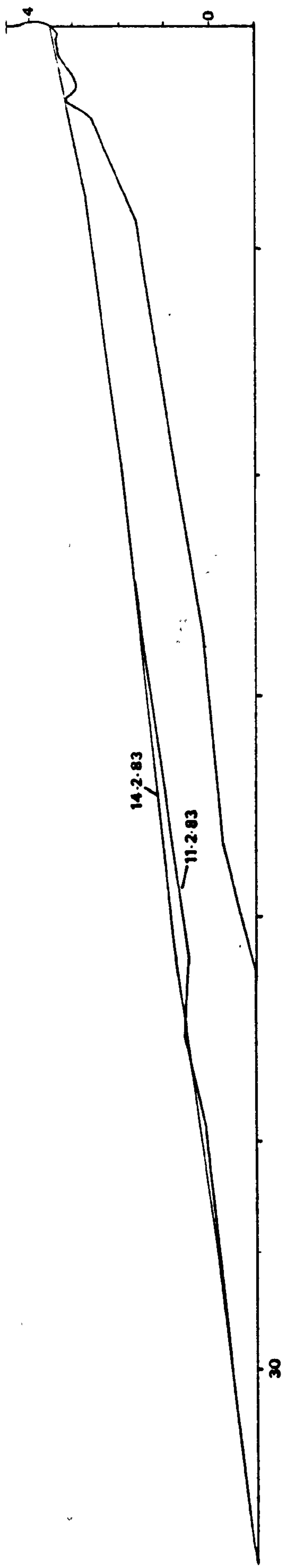
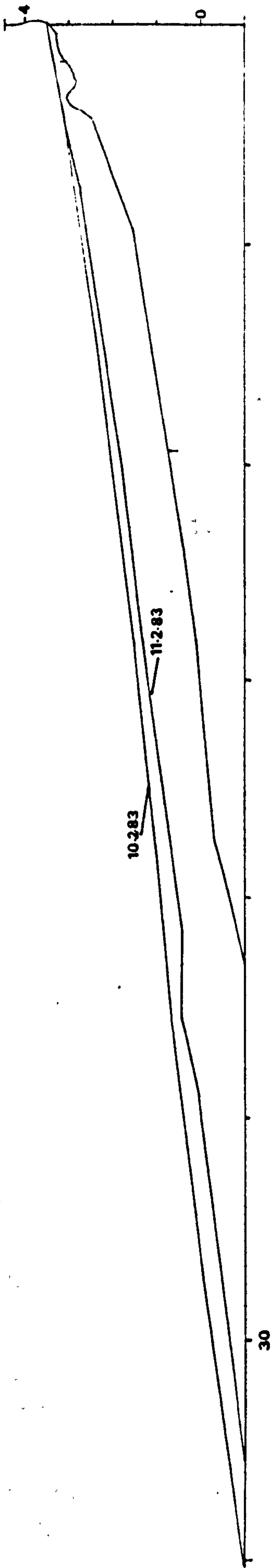
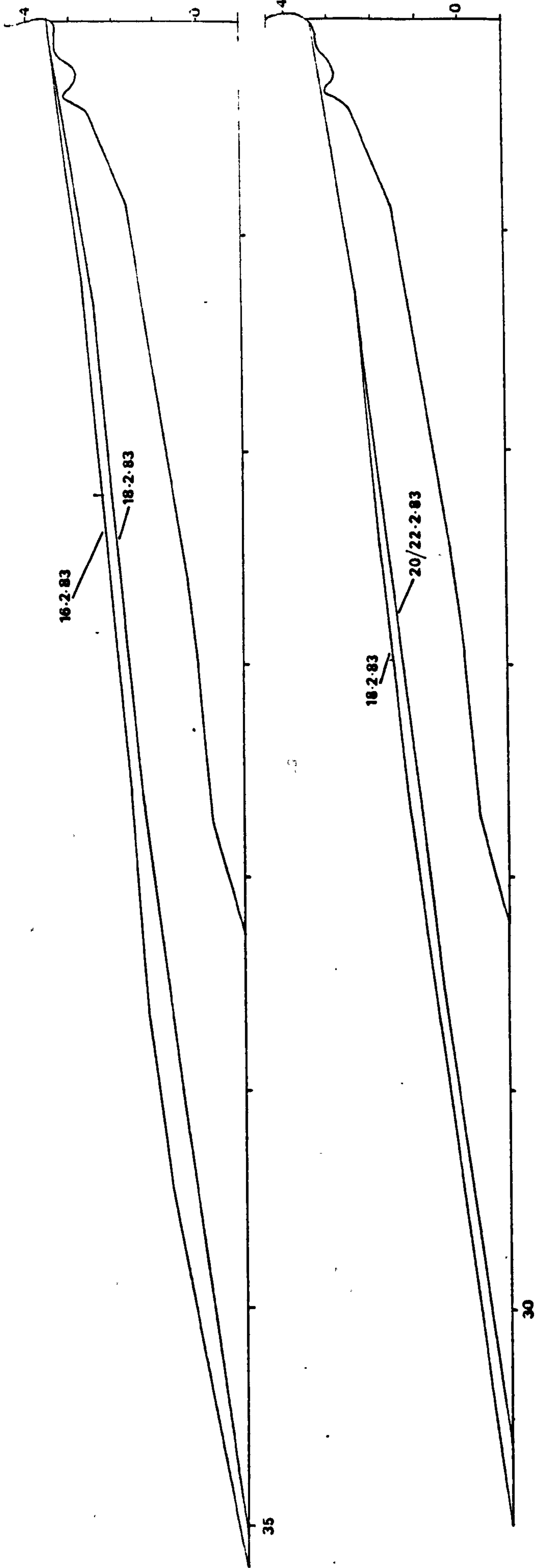
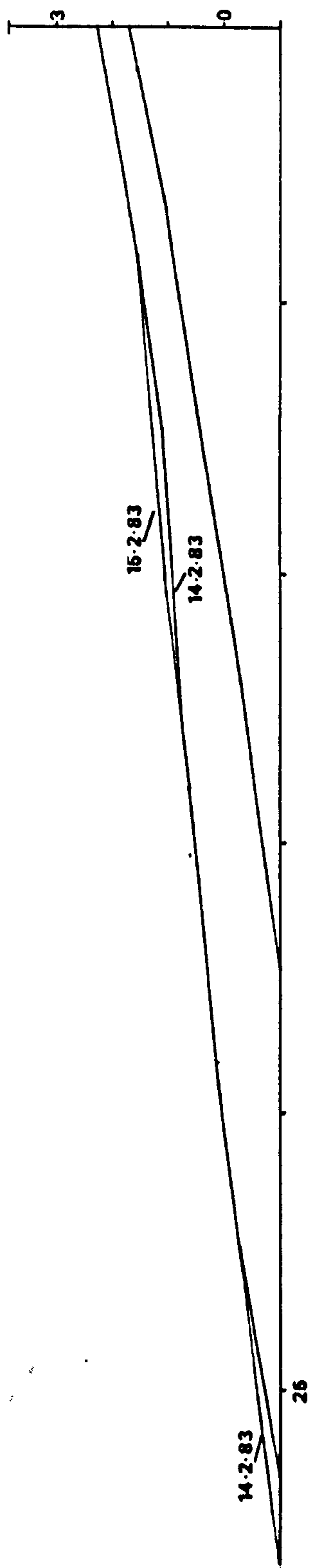
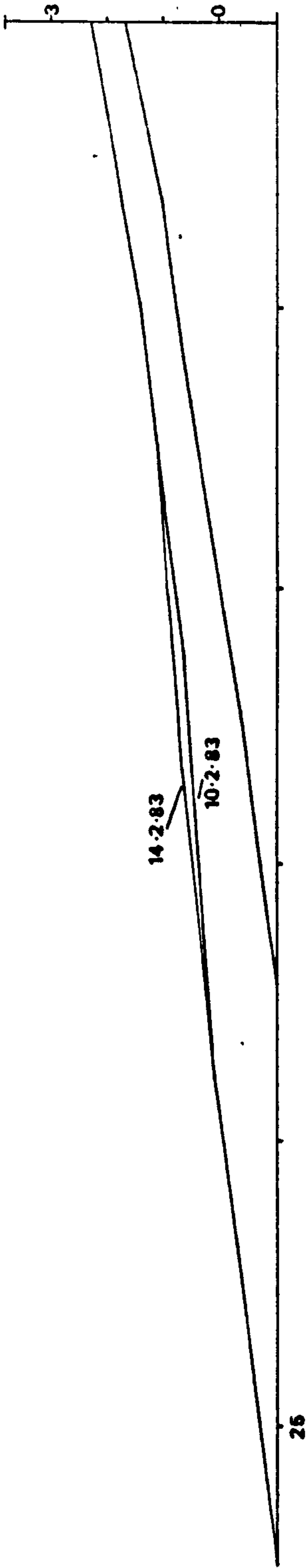
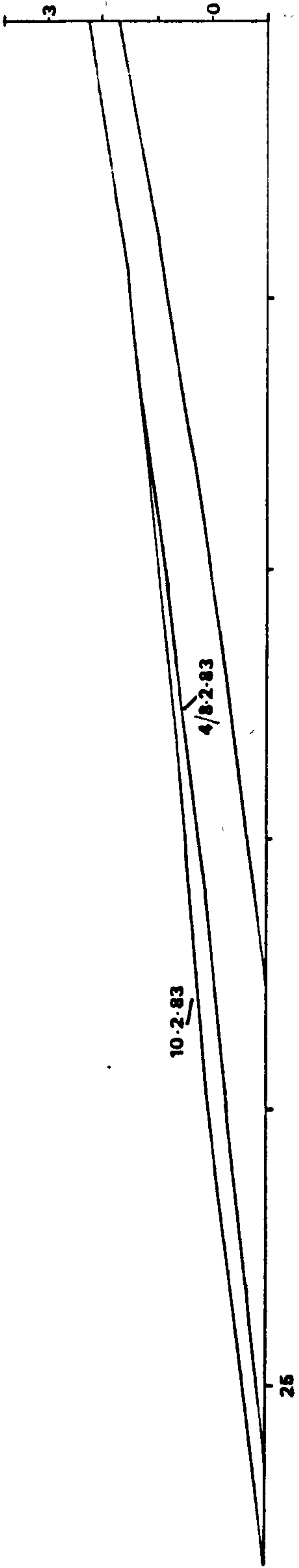


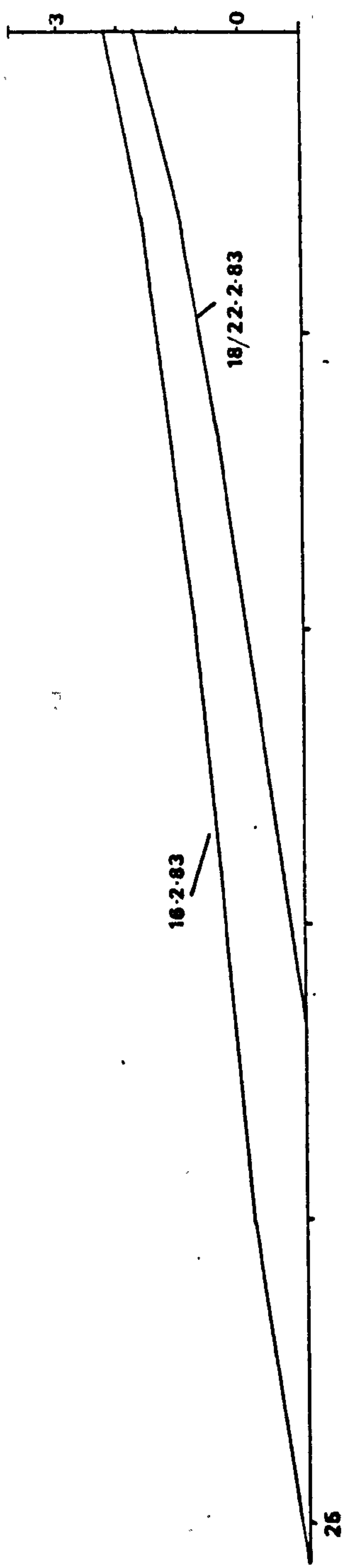
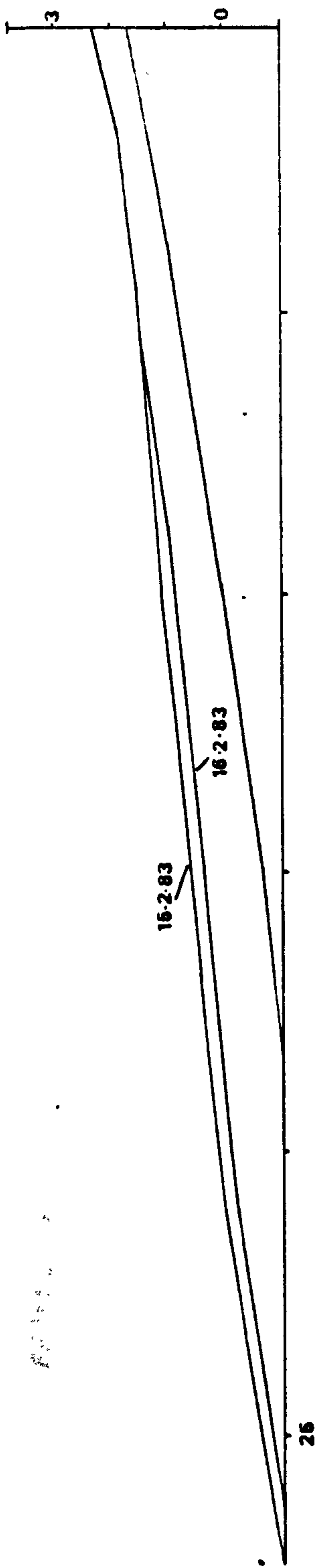
Figure 15



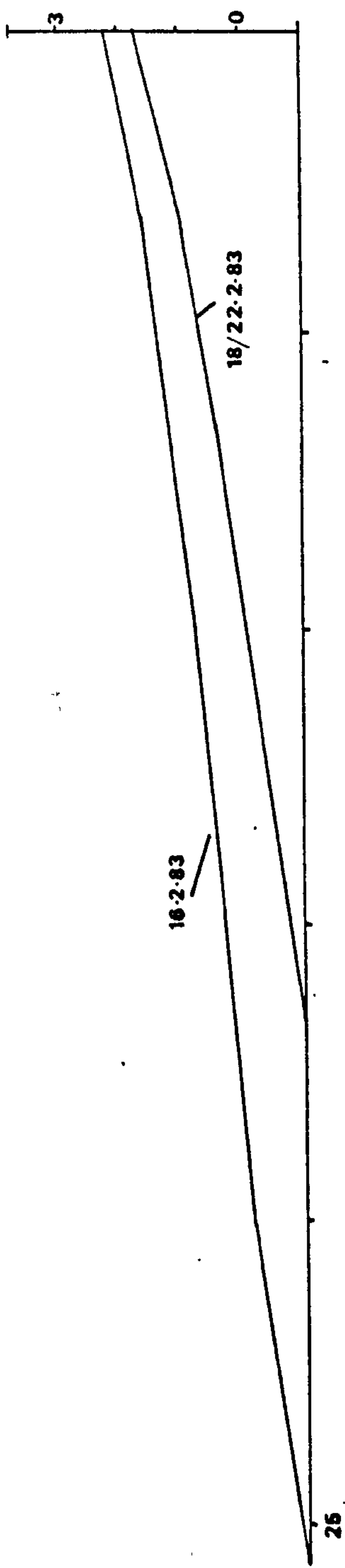
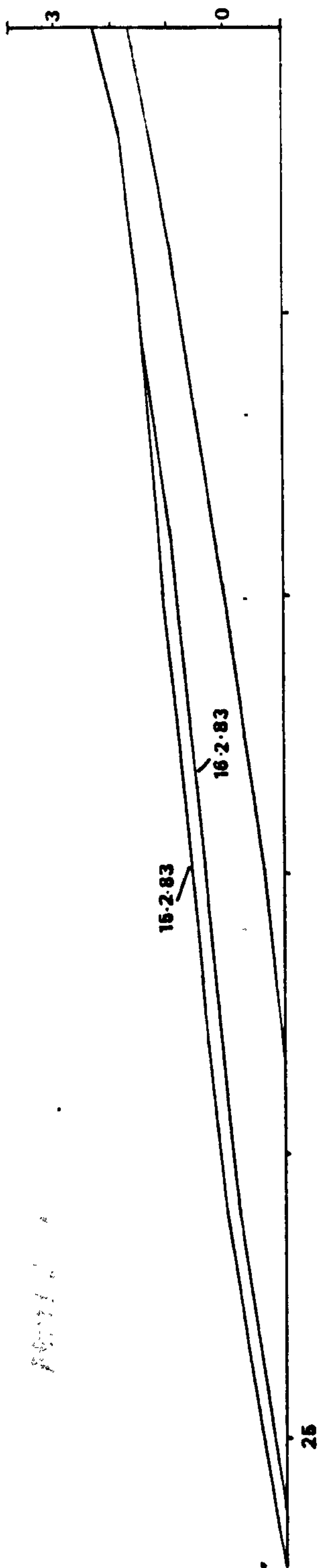
**PROFILE 6**



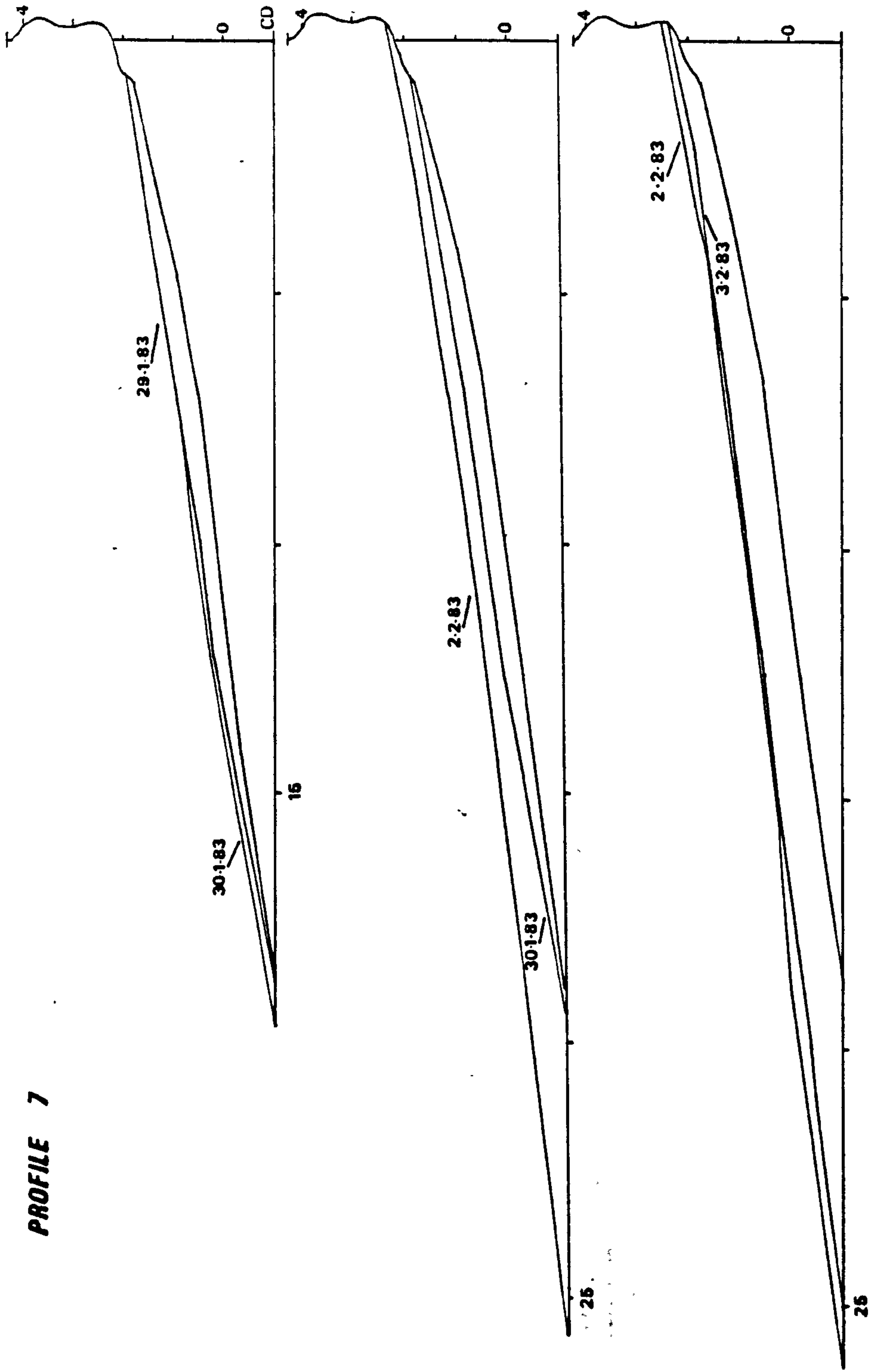


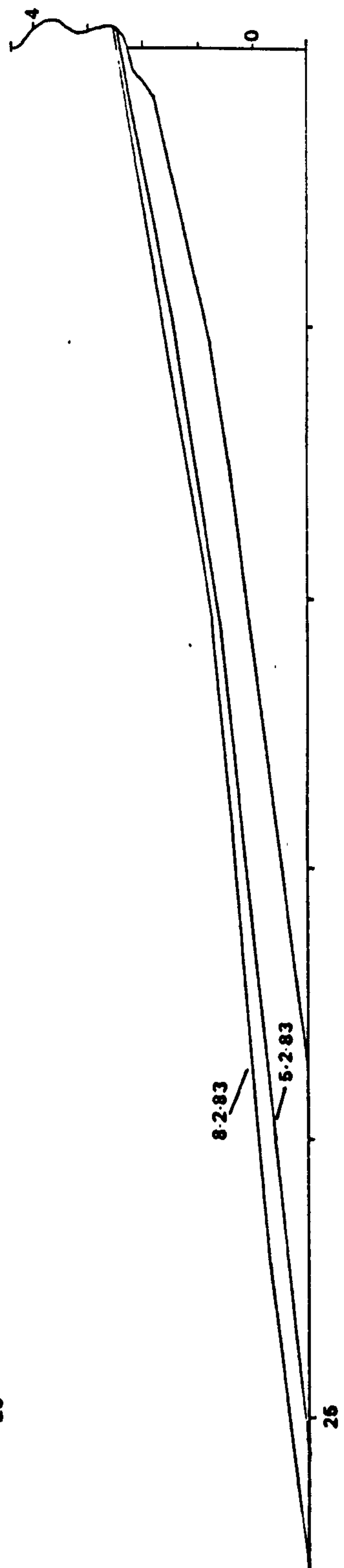
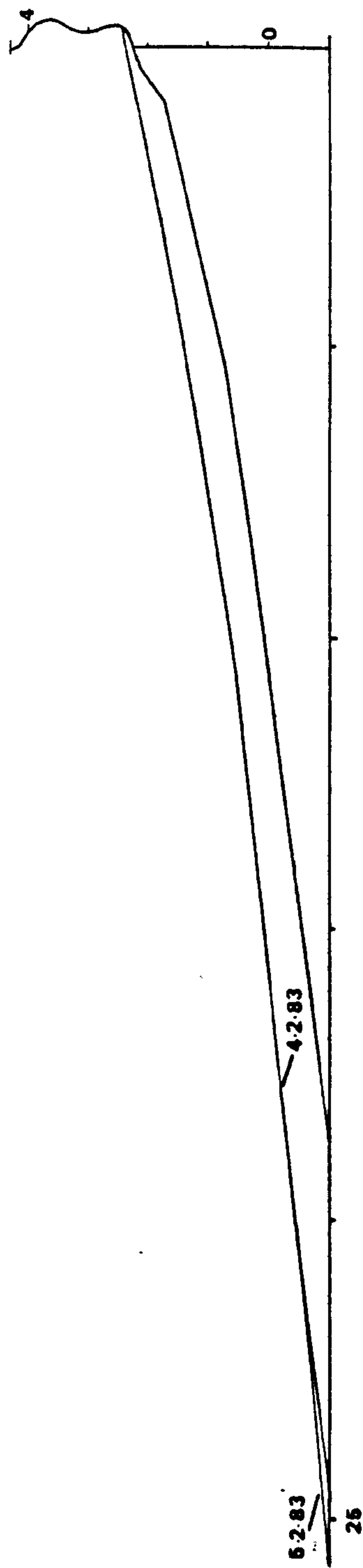


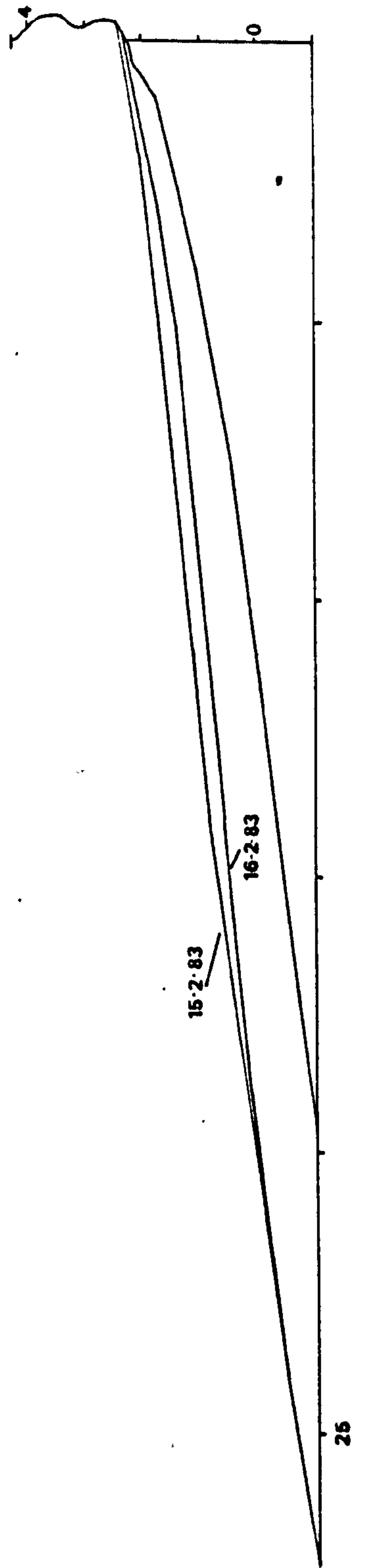
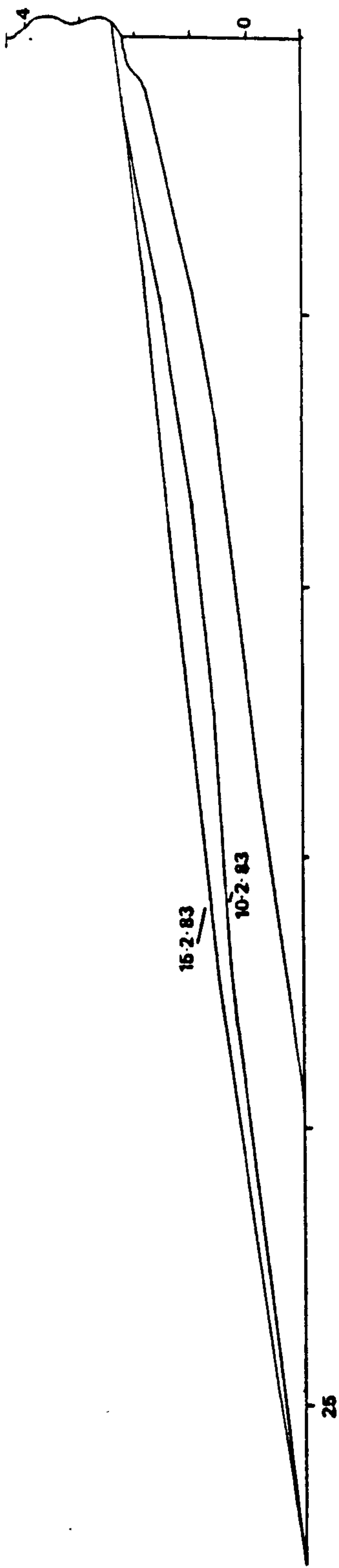
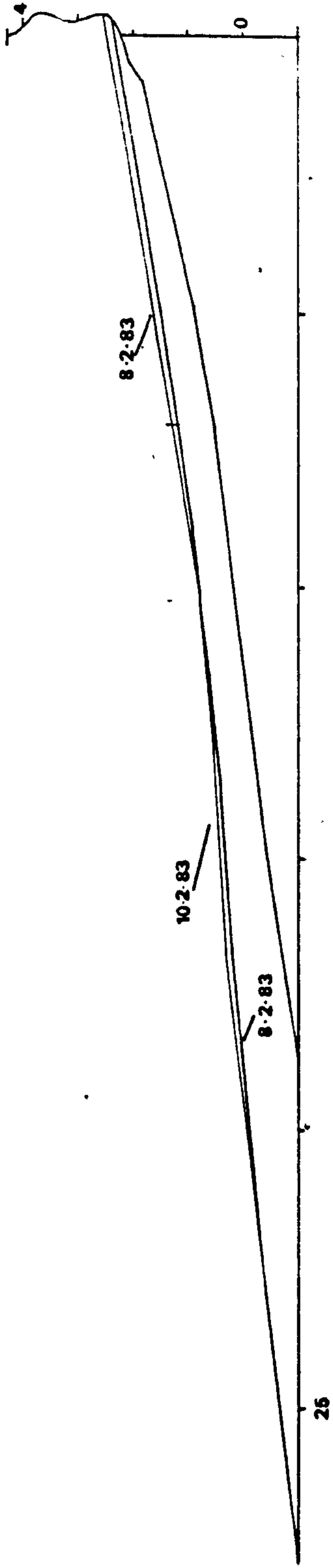




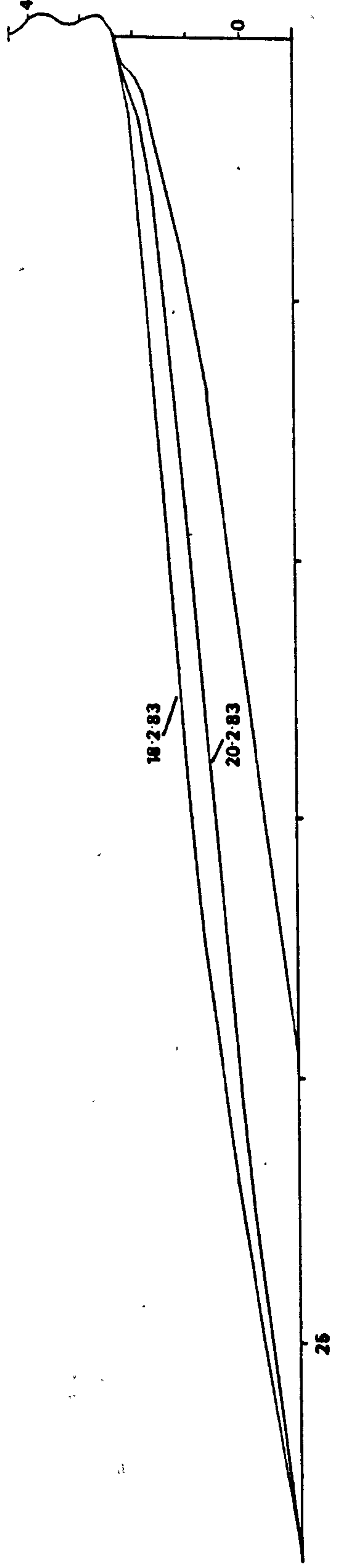
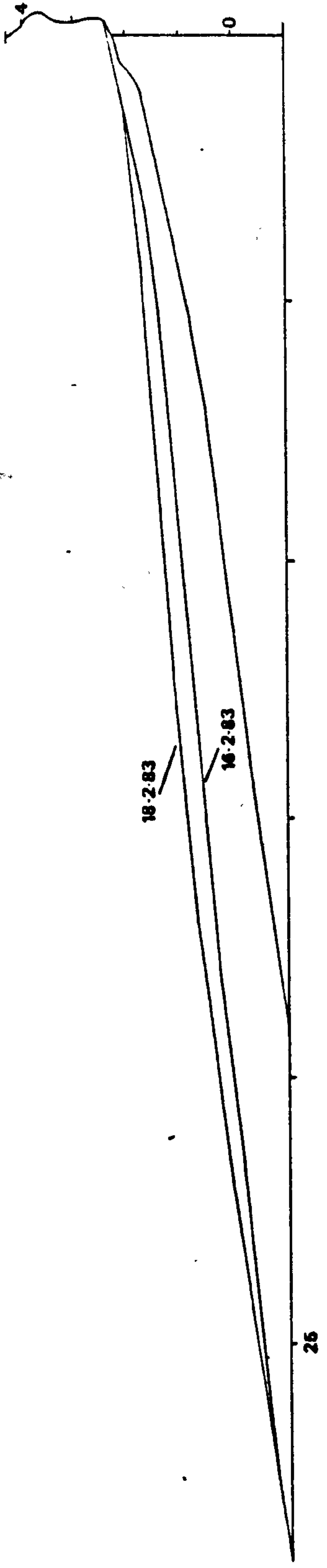
**PROFILE 7**



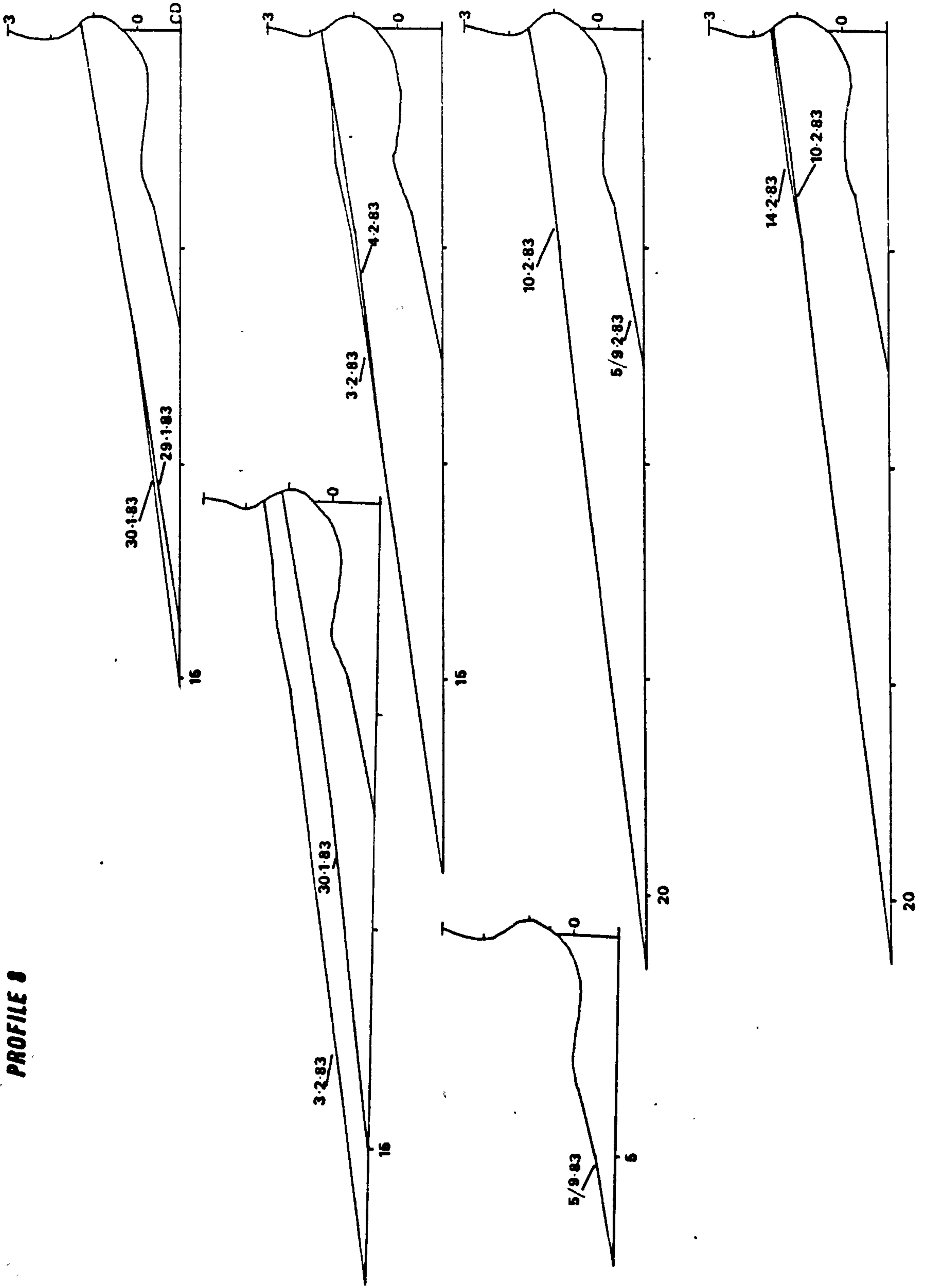


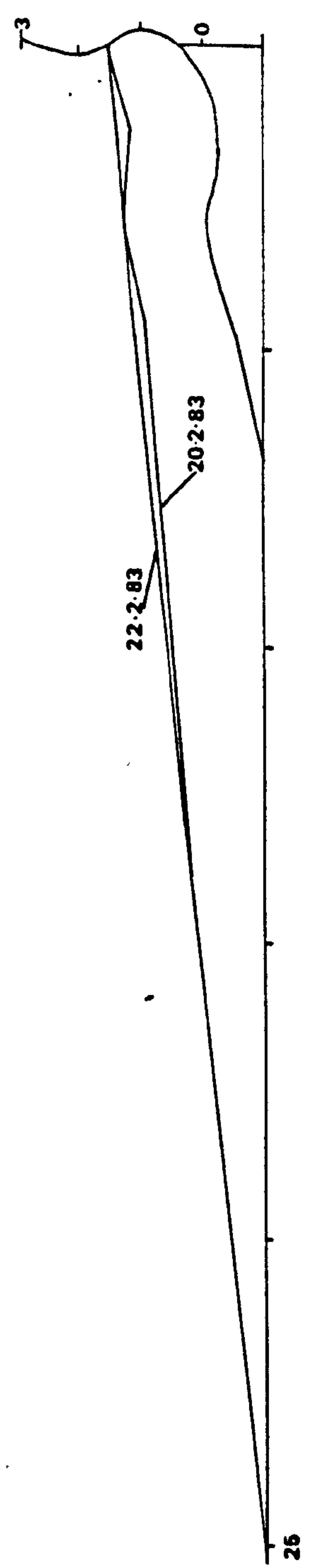
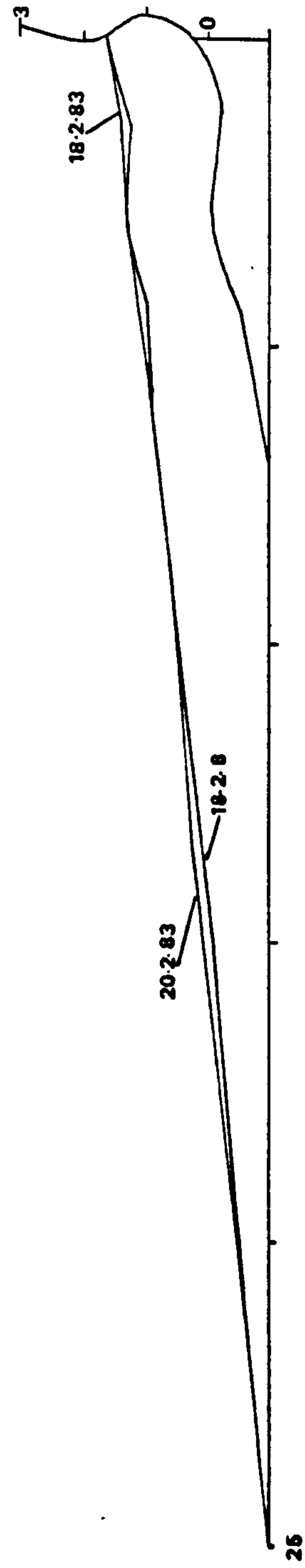
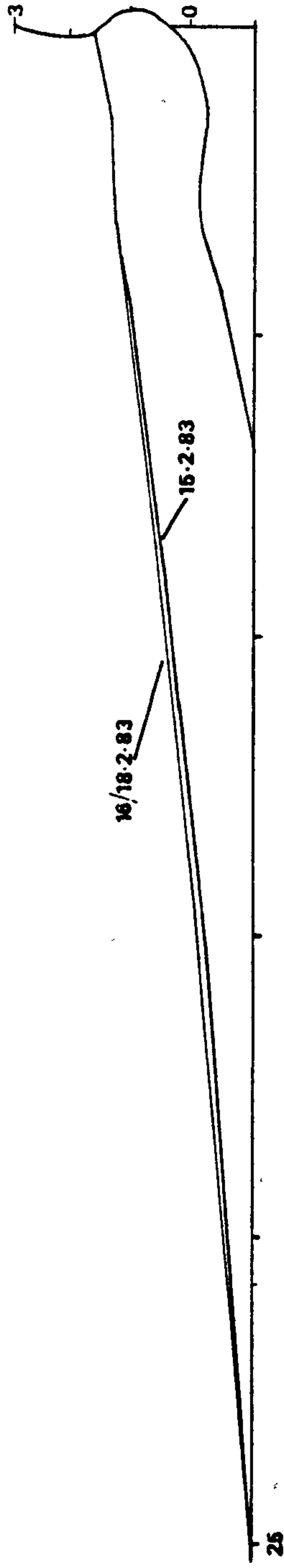
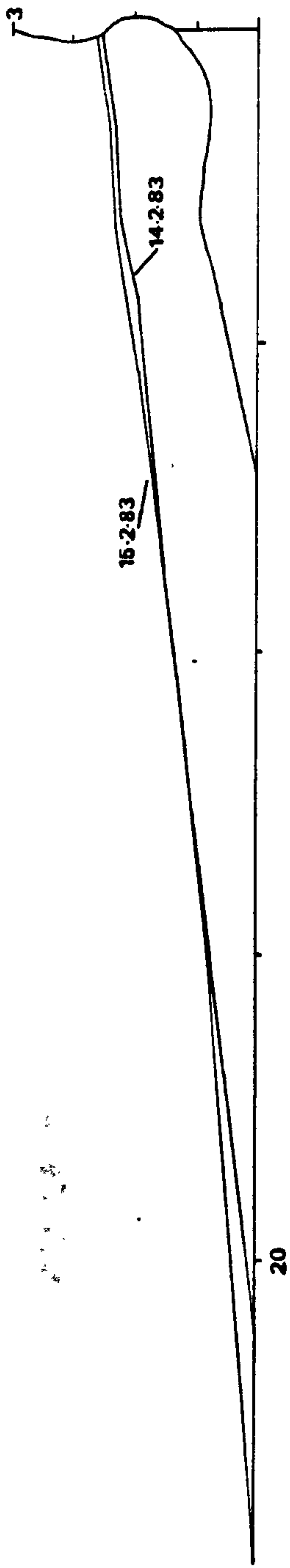


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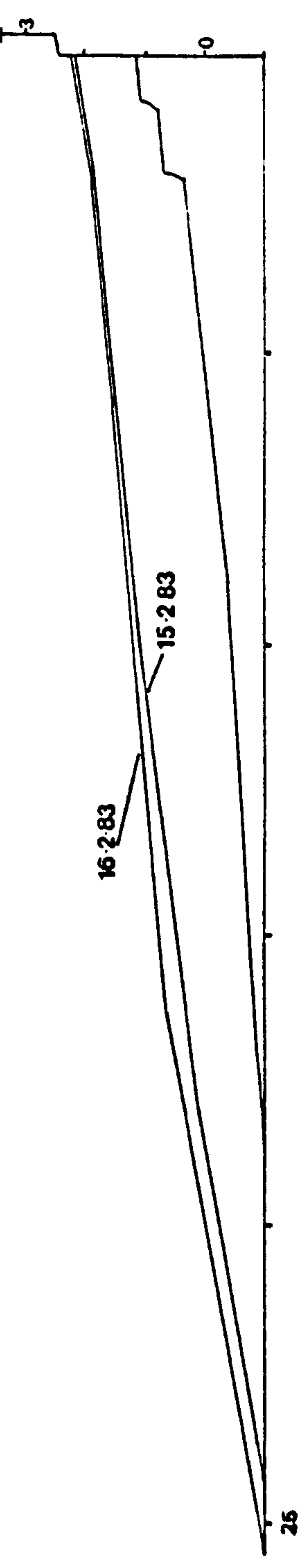
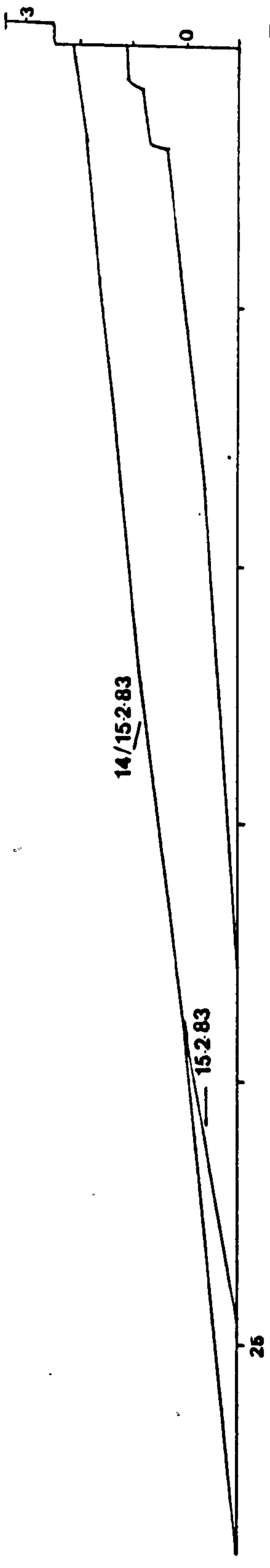
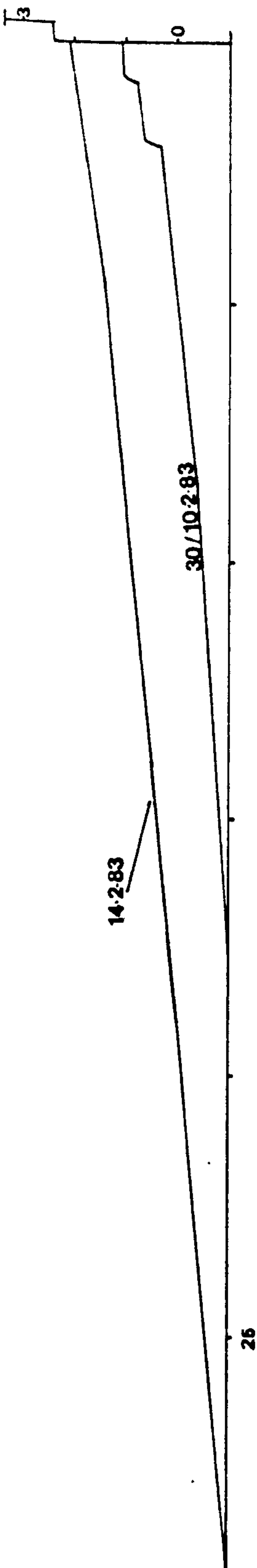
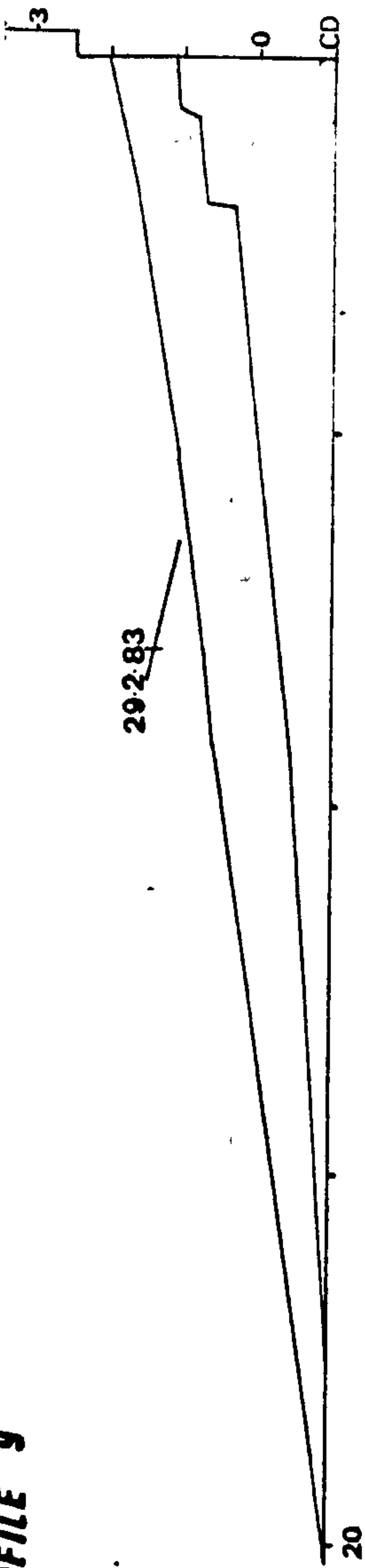


**PROFILE 8**

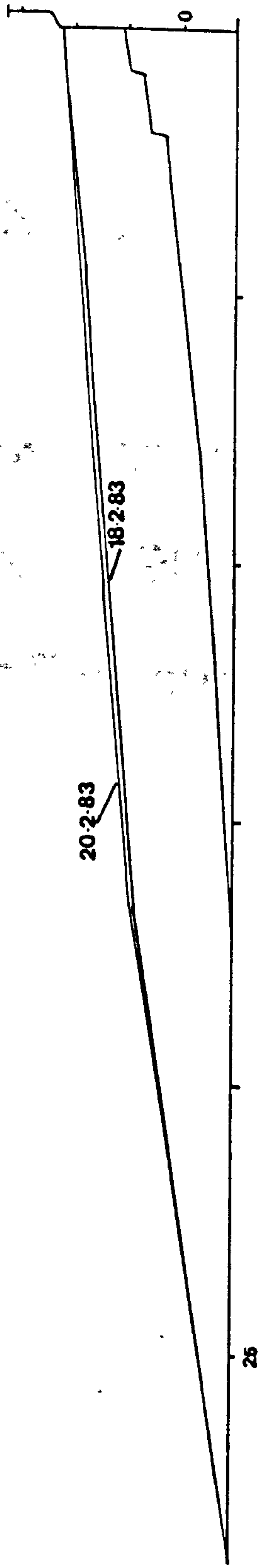
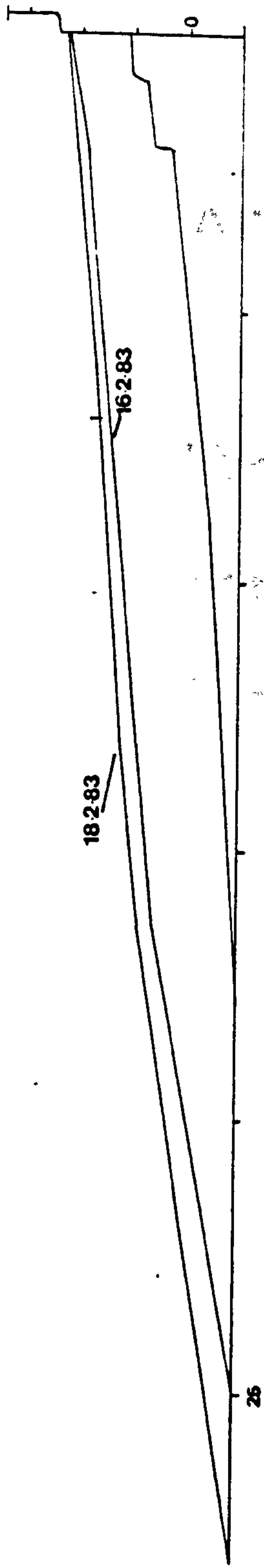




**PROFILE 9**





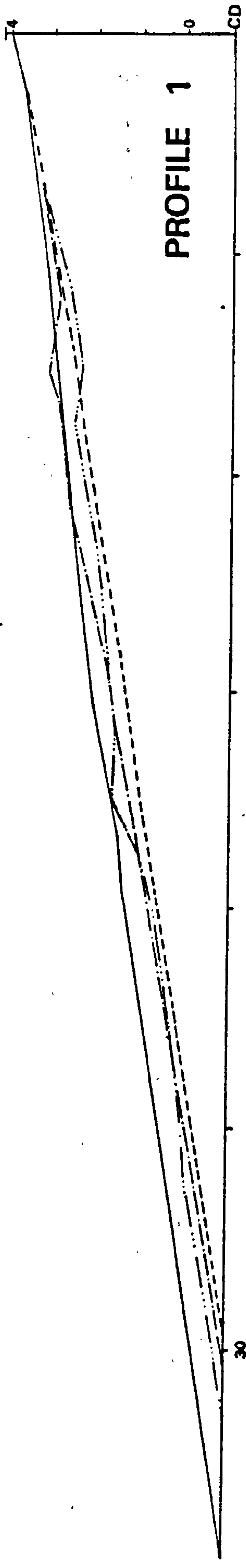


# **APPENDIX 3**

## **Worbarrow Storm Event Survey**

**September 1983**

**Beach profile changes**



**PROFILE 1**

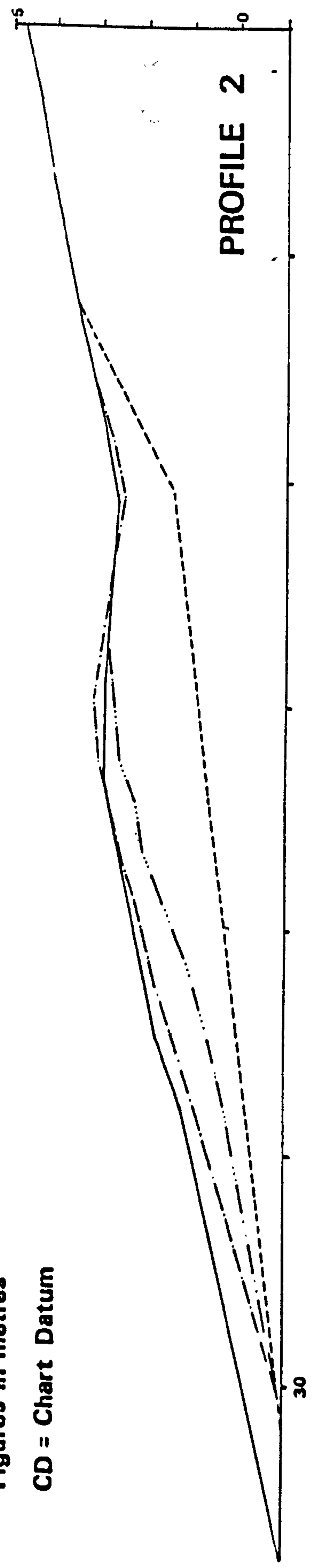
- 1-9-83
- - - 4-9-83
- · - · 18-9-83
- · · · 25-9-83

**STORM EVENT SURVEY - SEPTEMBER 1983**

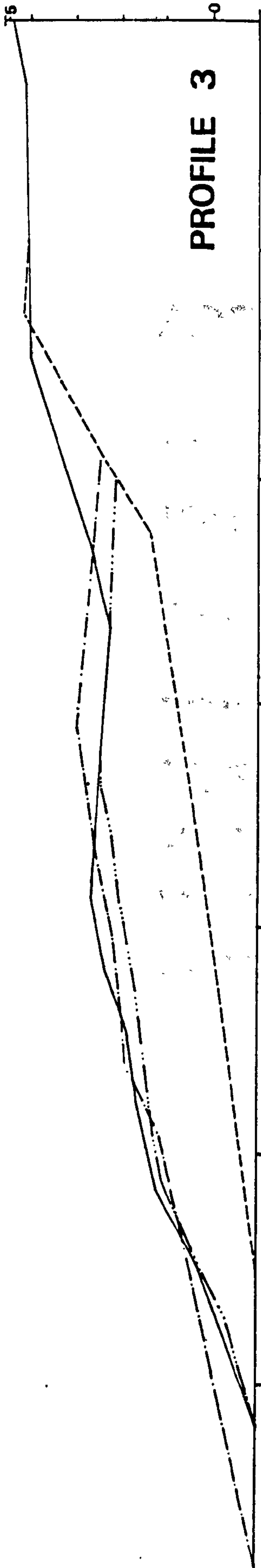
**WORBARROW BAY**

**Figures in metres**

**CD = Chart Datum**

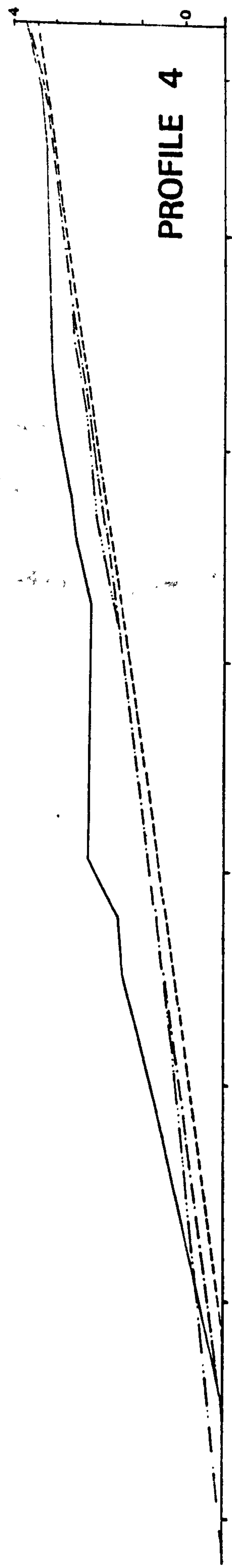


**PROFILE 2**



**PROFILE 3**

- 1-9-83
- - - 4-9-83
- · - 18-9-83
- · - 25-9-83



**PROFILE 4**

# **APPENDIX 4**

**Monthly Wind Roses  
Monthly Beach Profiles**

**July 1983 – September 1984**

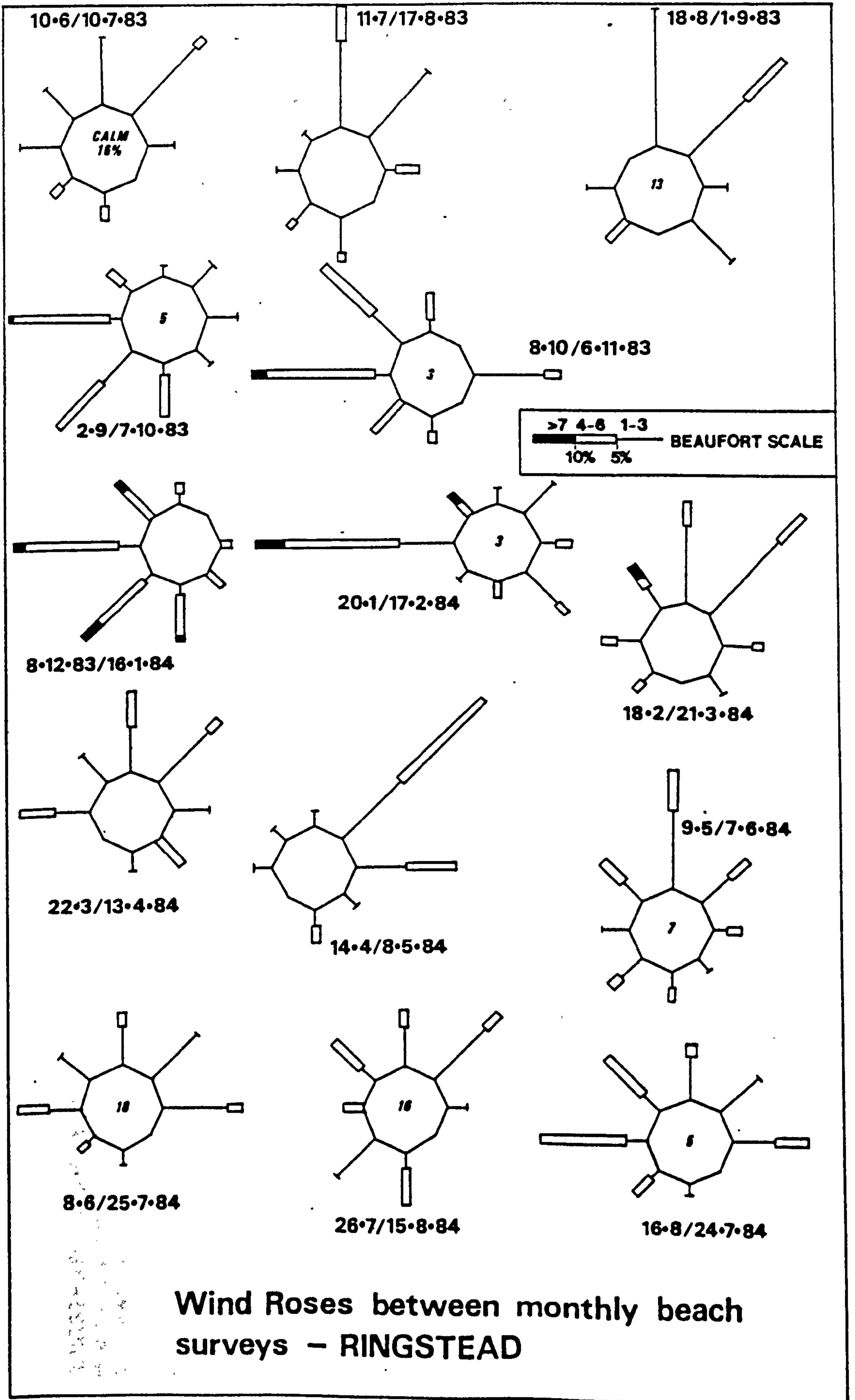
**RINGSTEAD**

**DURDLE DOOR**

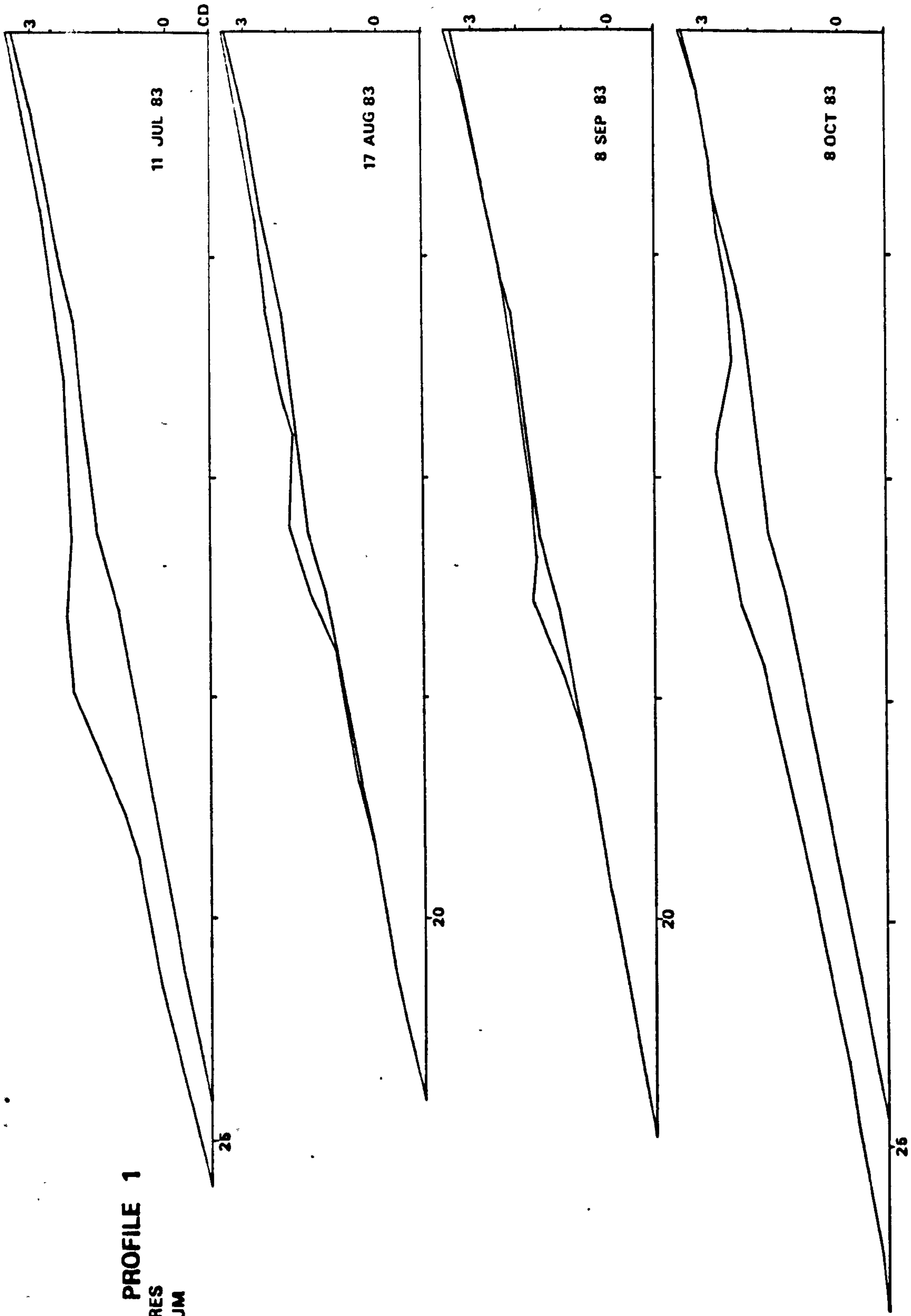
**MAN O'WAR**

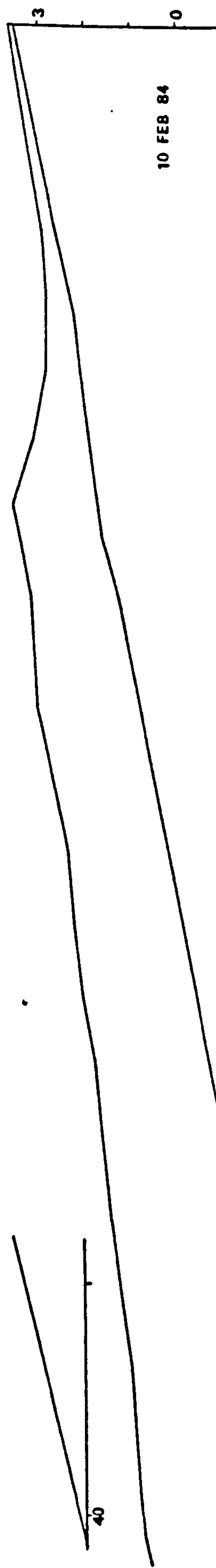
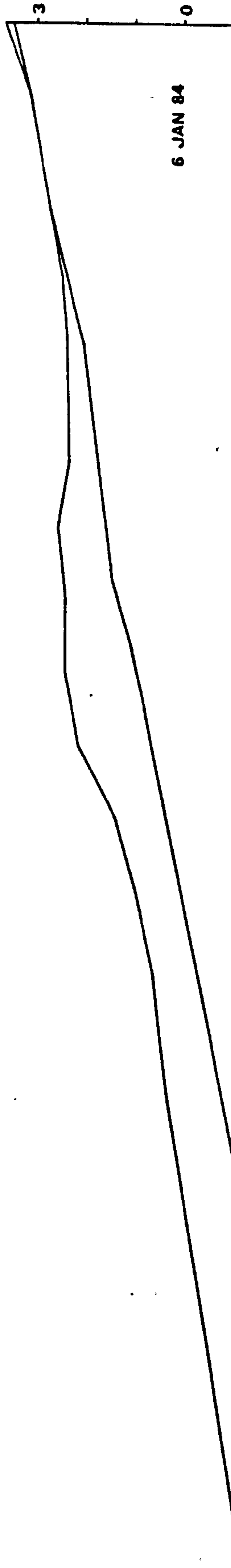
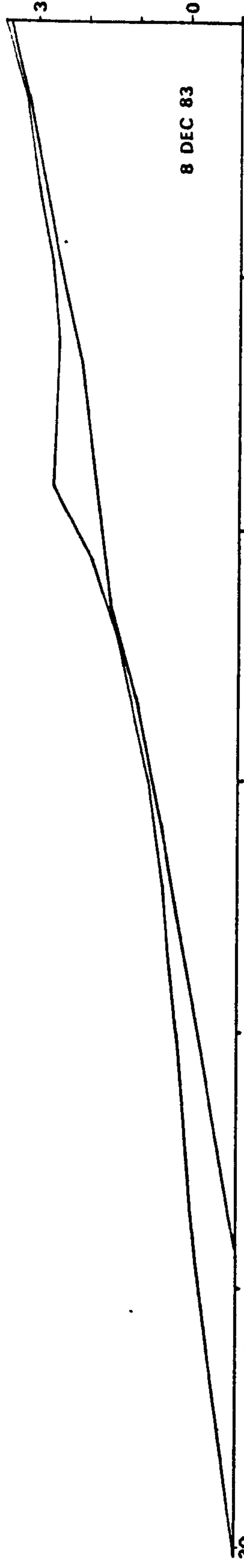
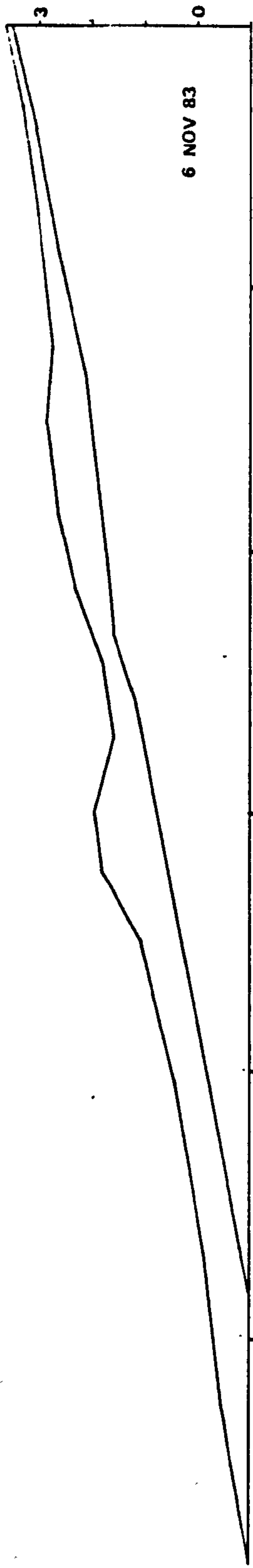
**MUPE**

**WORBARROW**

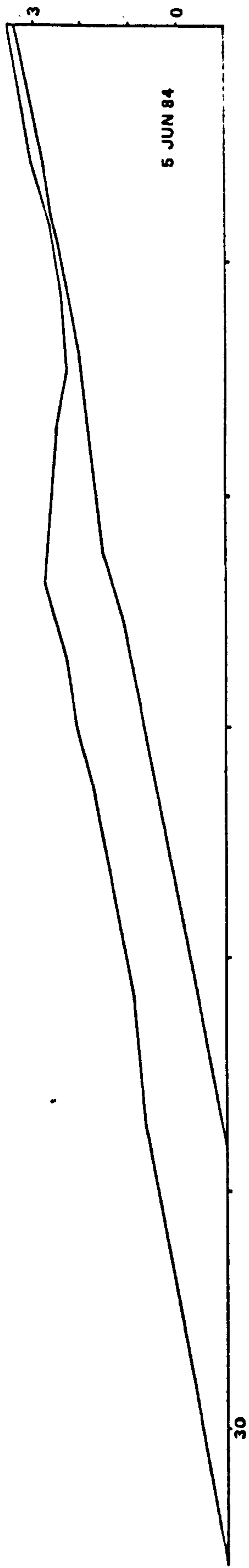
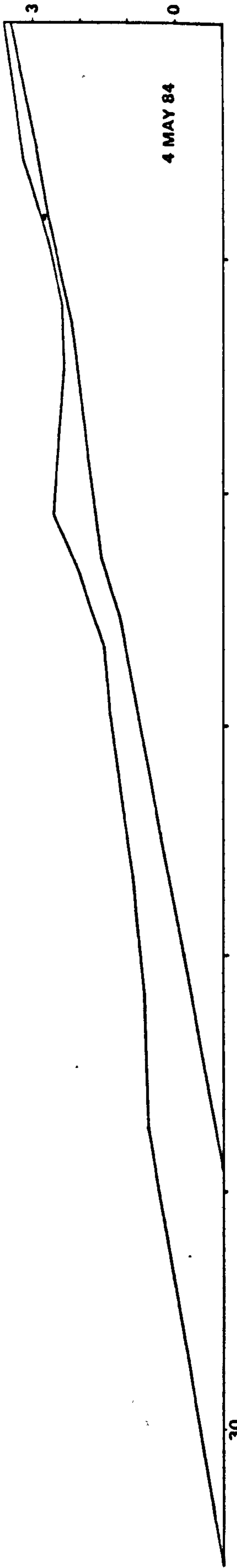
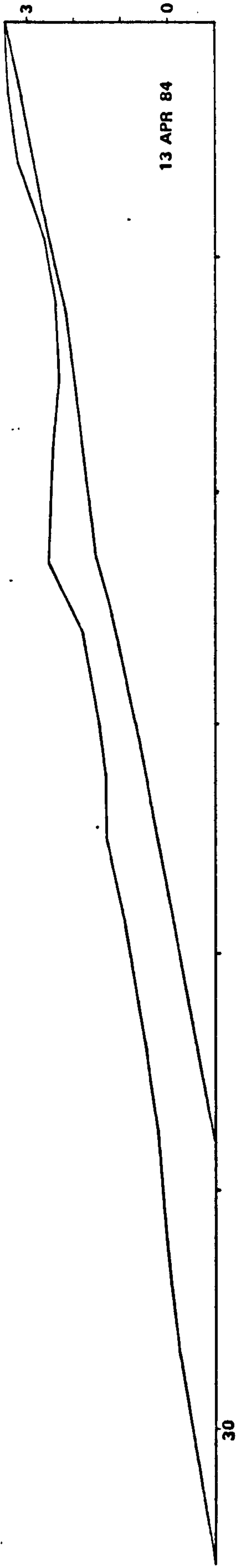
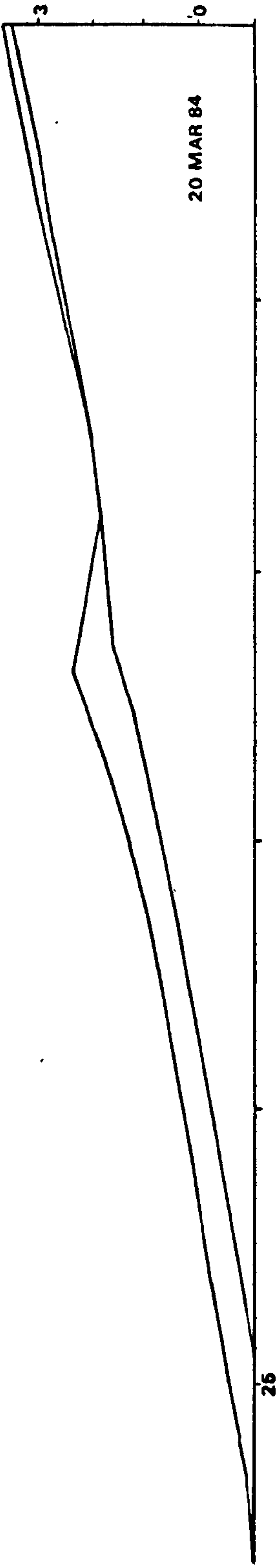


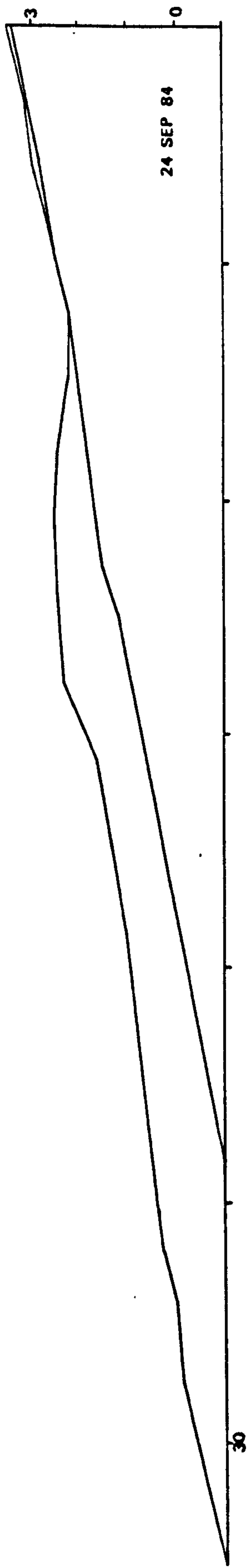
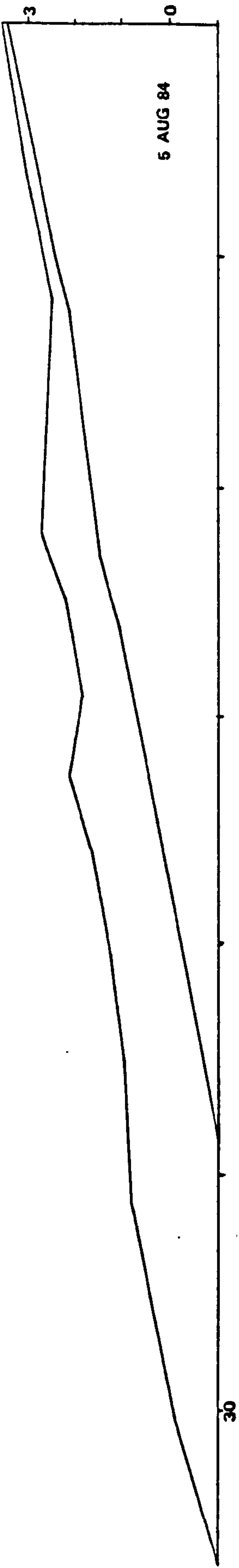
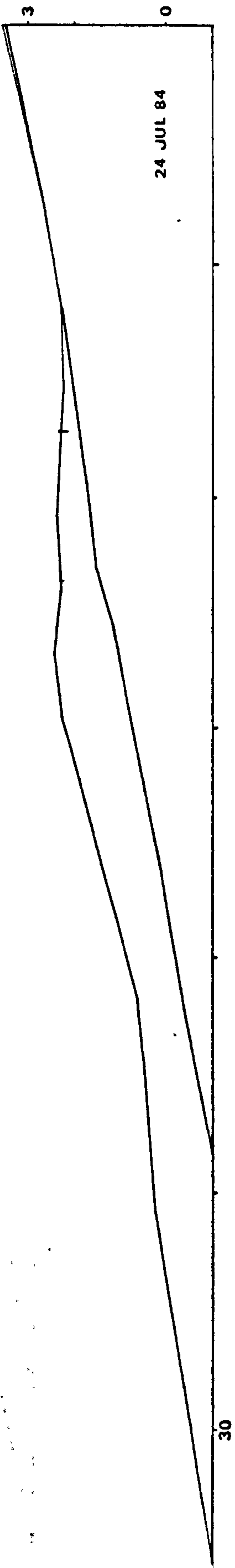
**RINGSTEAD PROFILE 1**  
**FIGURES IN METRES**  
**CD = CHART DATUM**



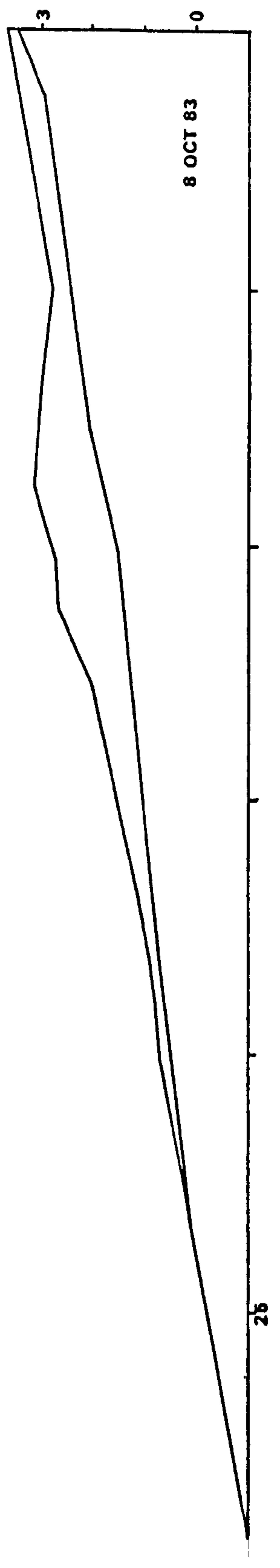
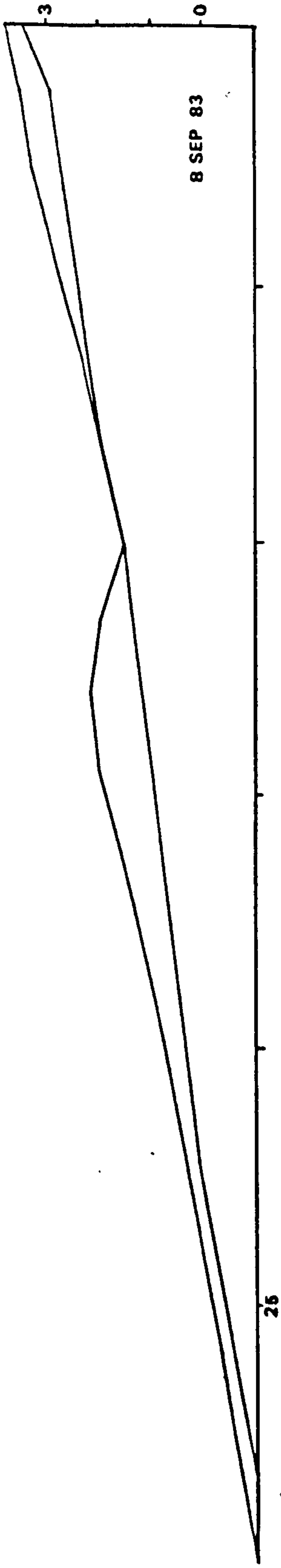
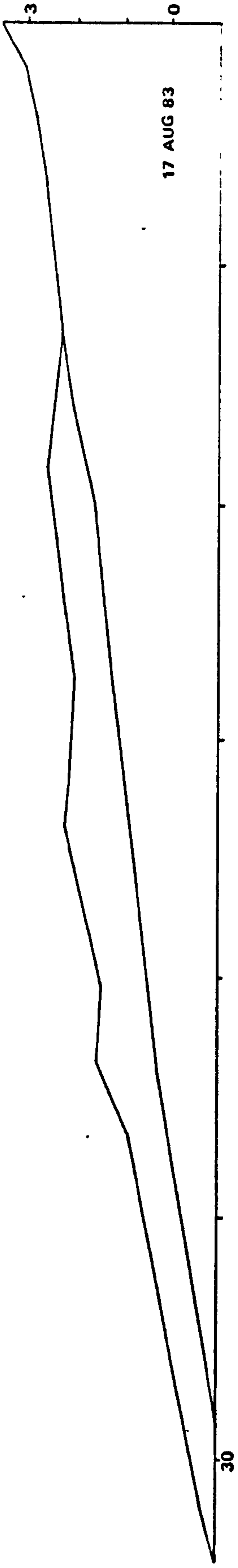
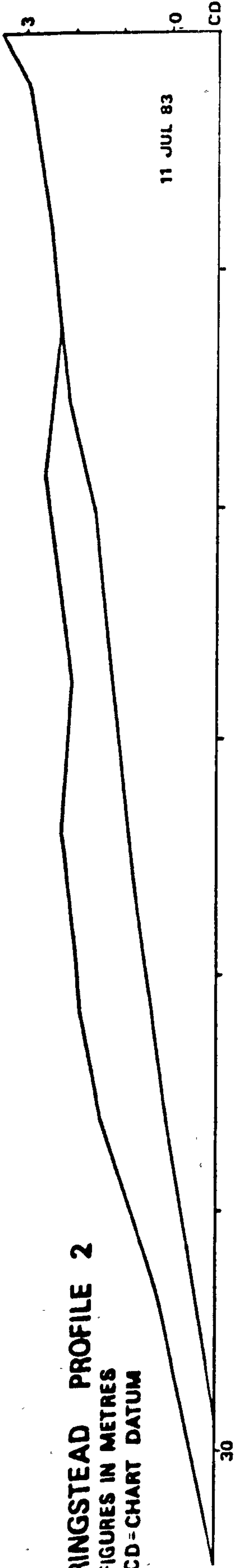


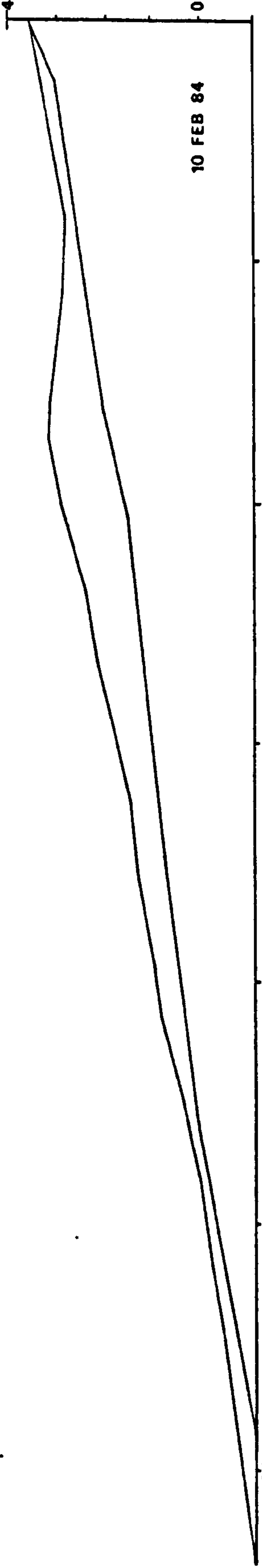
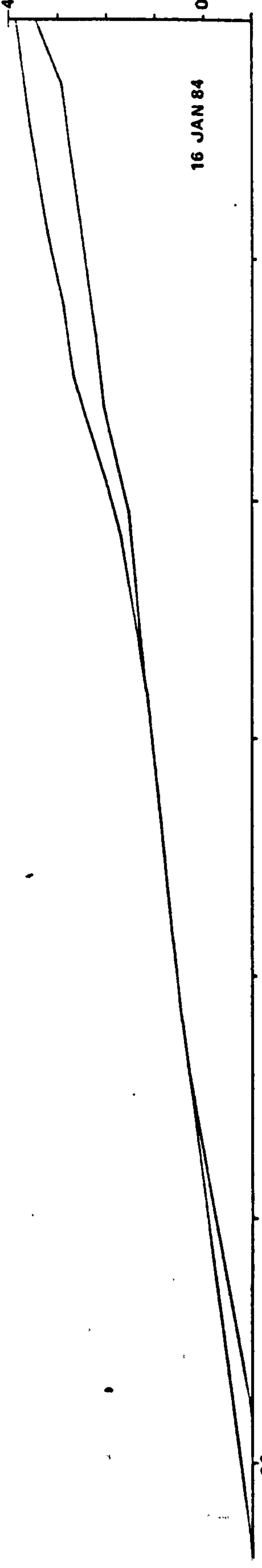
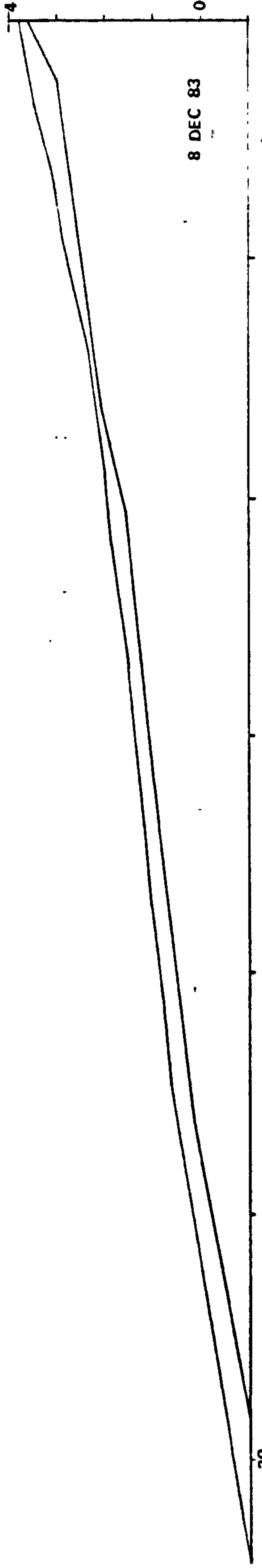
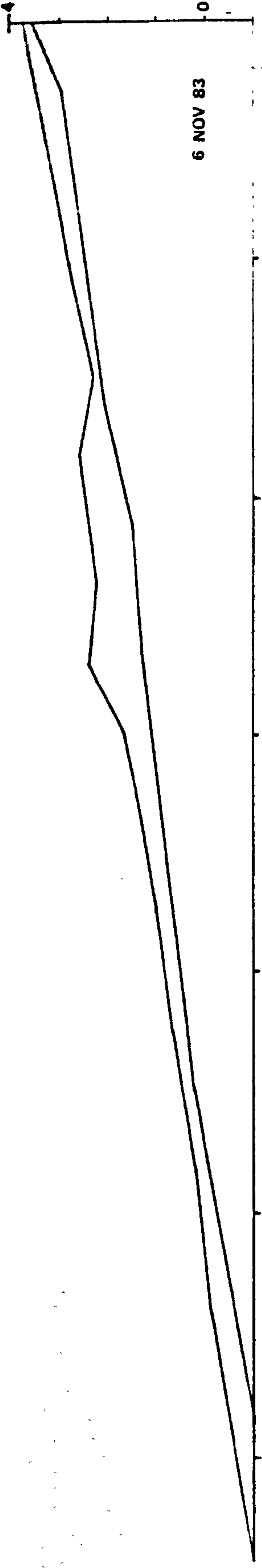


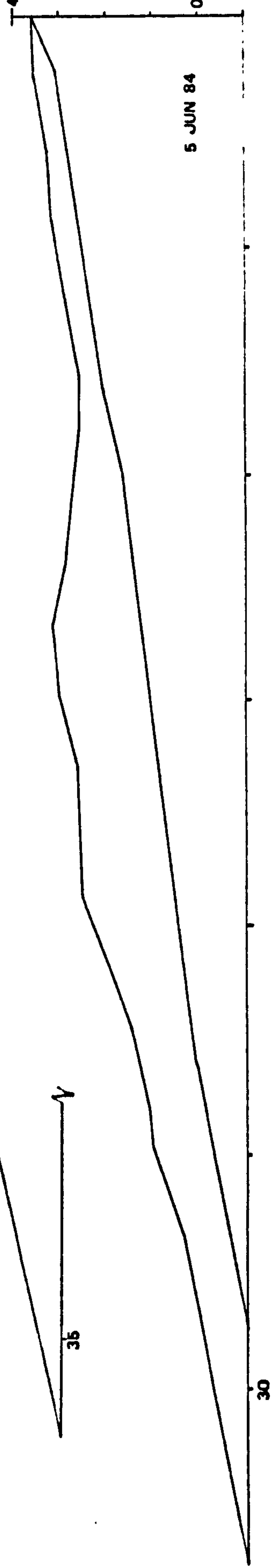
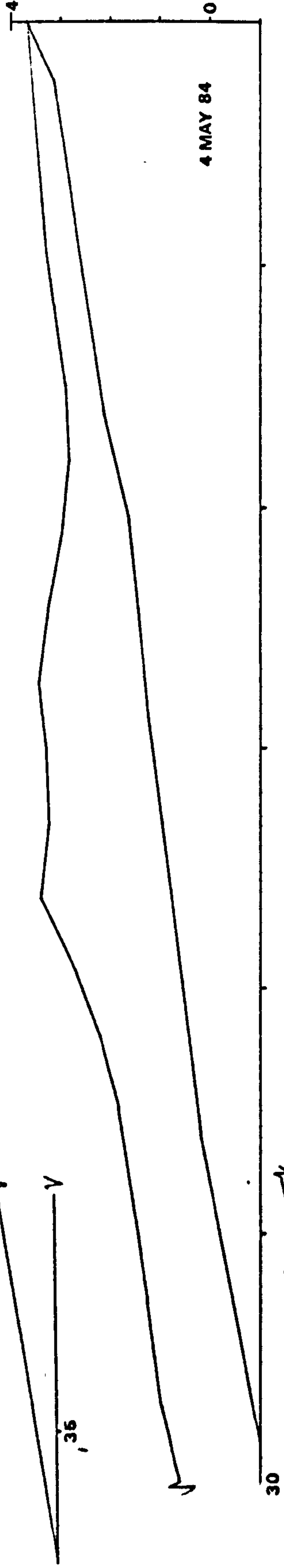
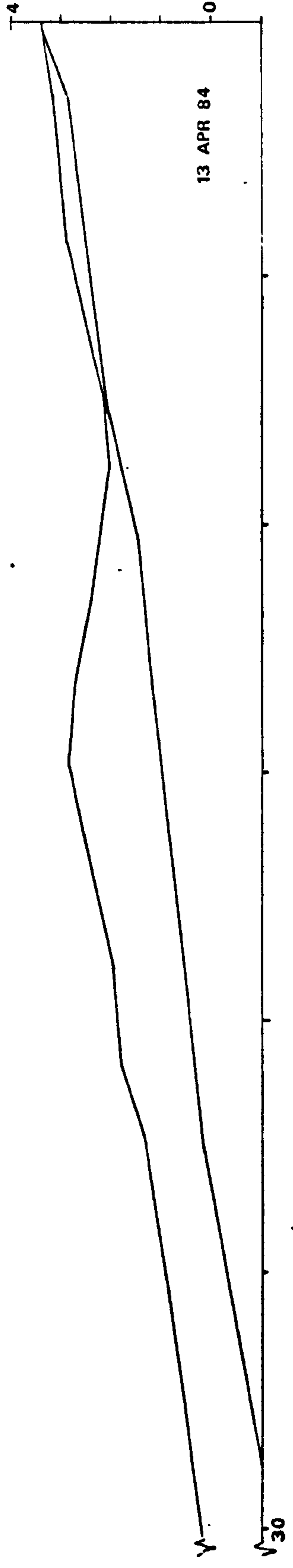
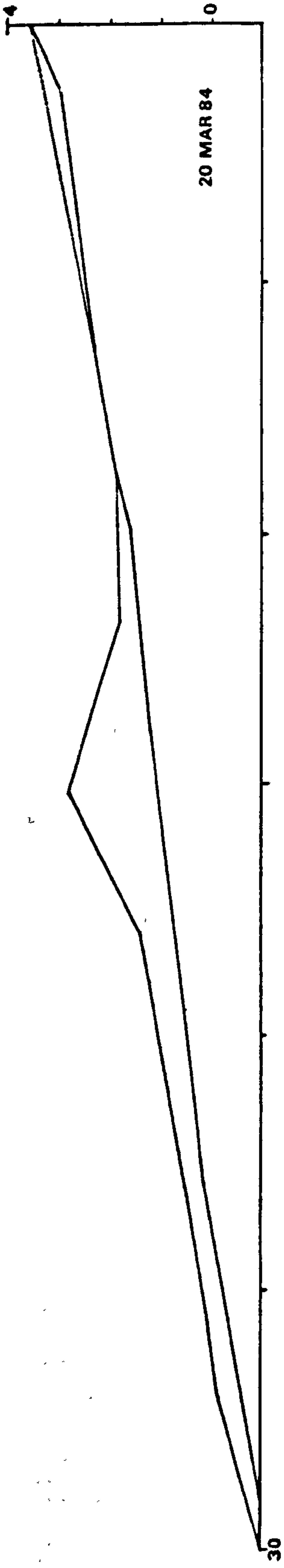


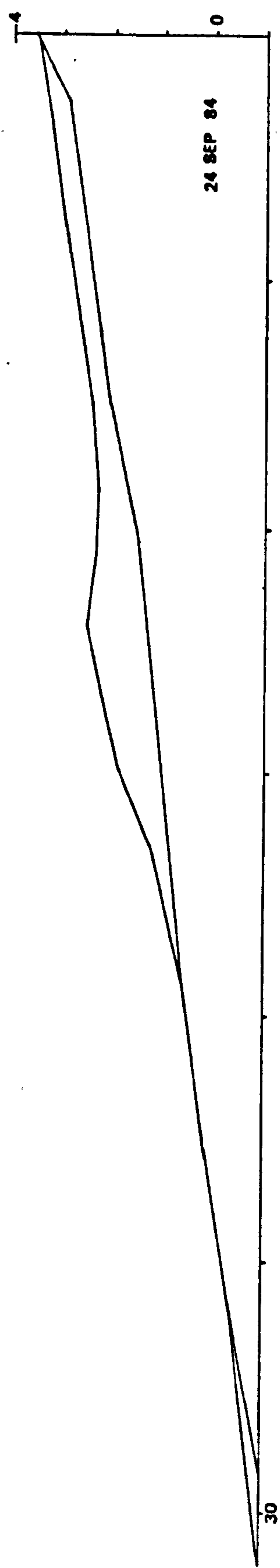
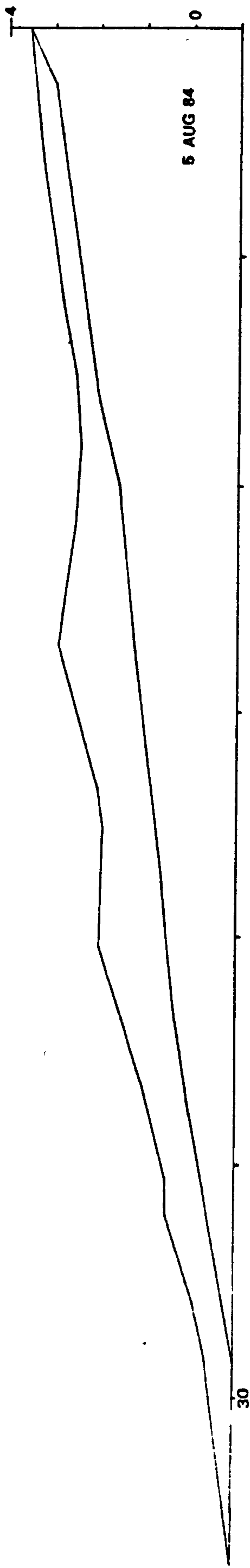
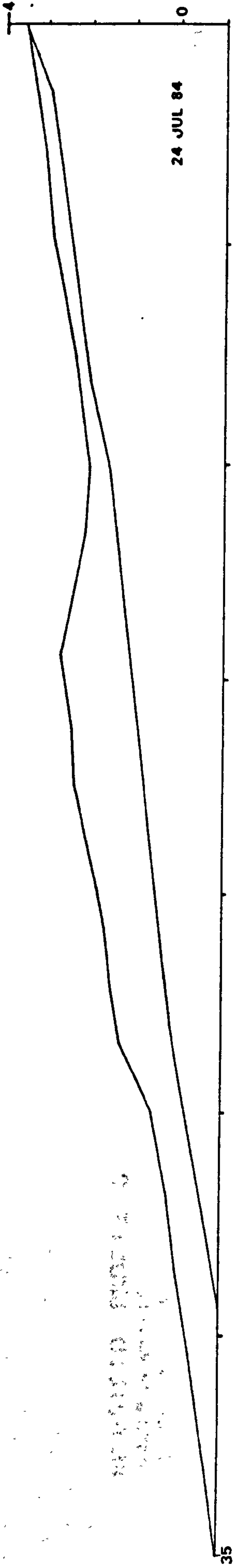


**RINGSTEAD PROFILE 2**  
**FIGURES IN METRES**  
**CD=CHART DATUM**

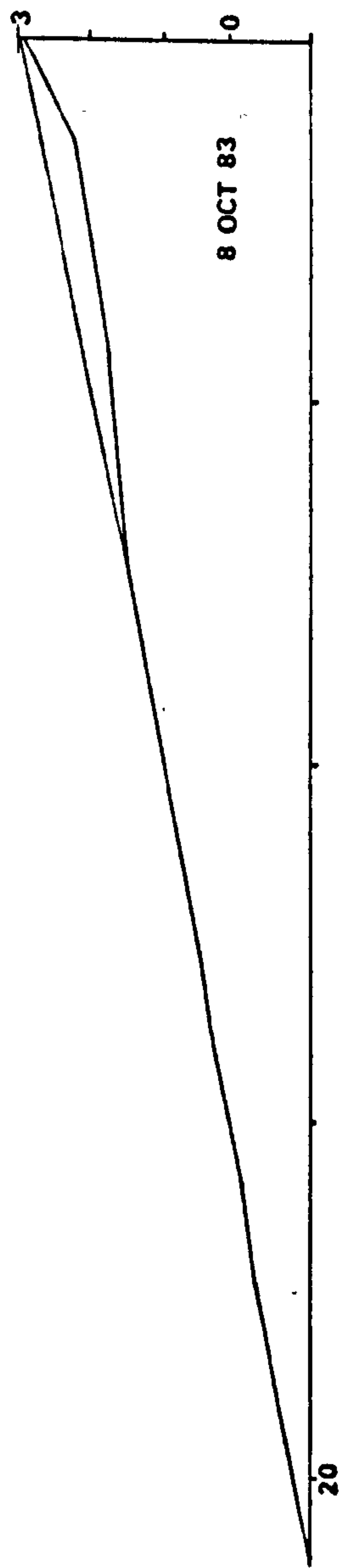
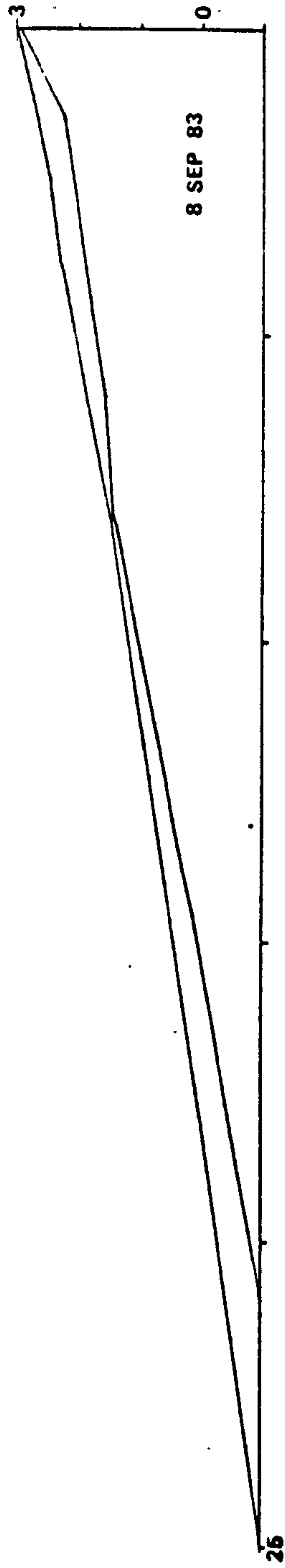
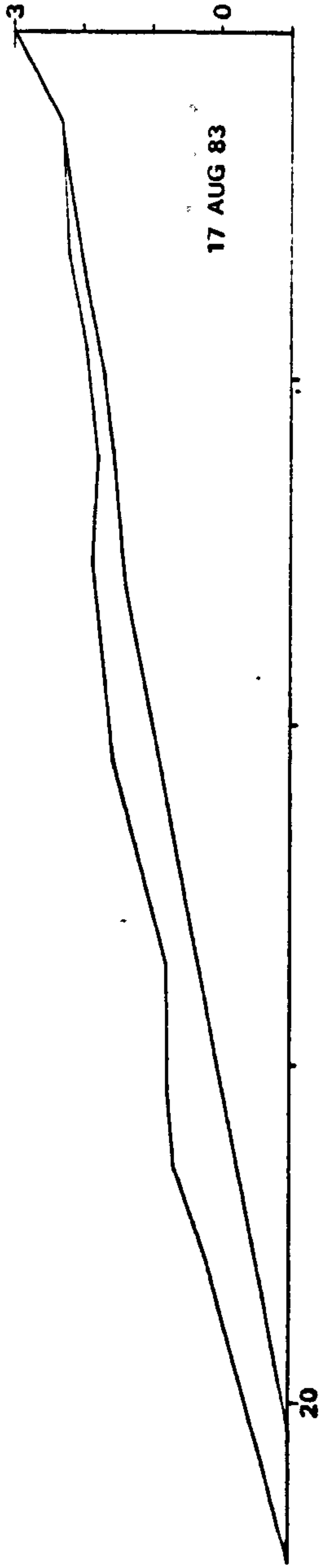
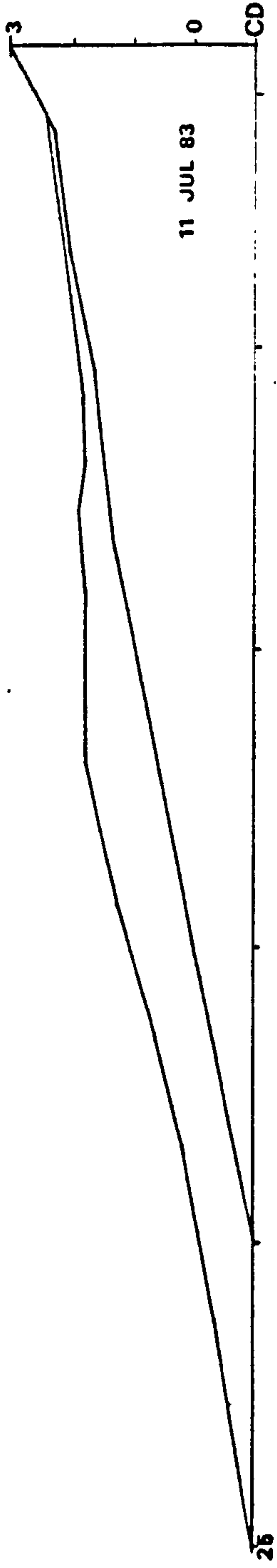


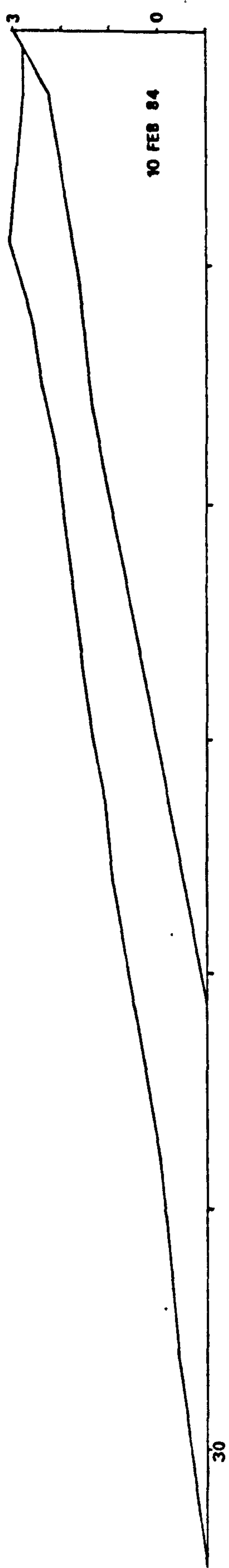
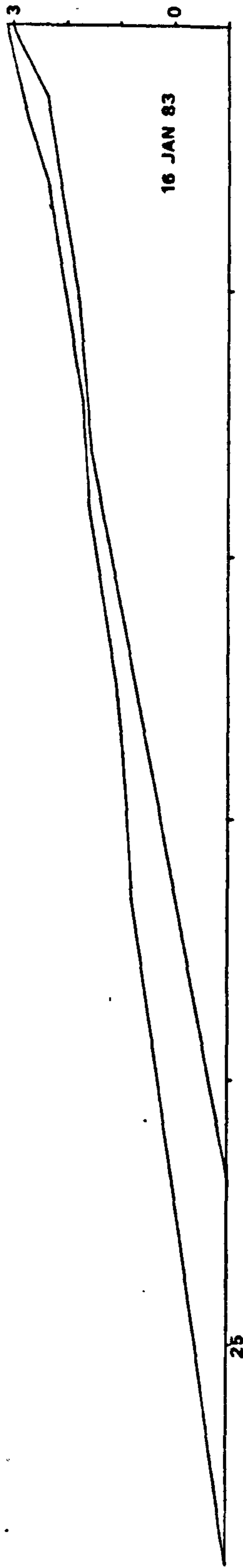
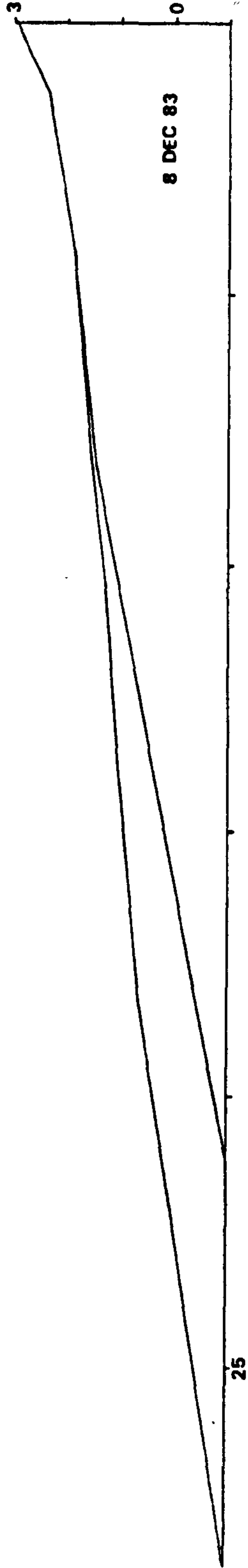
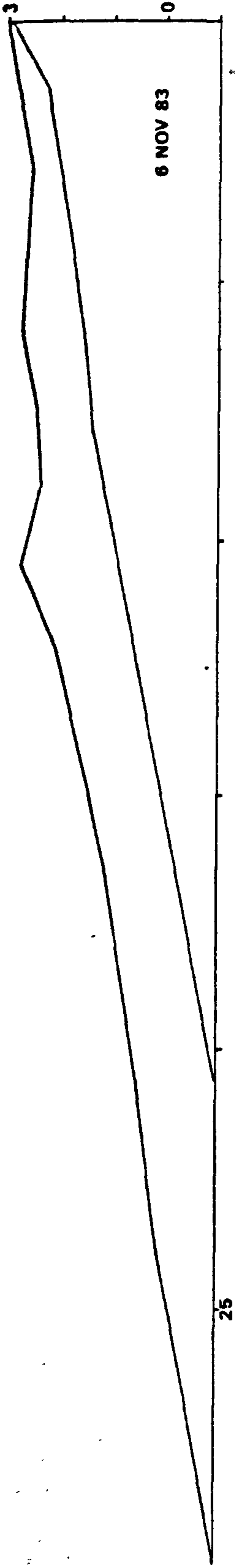




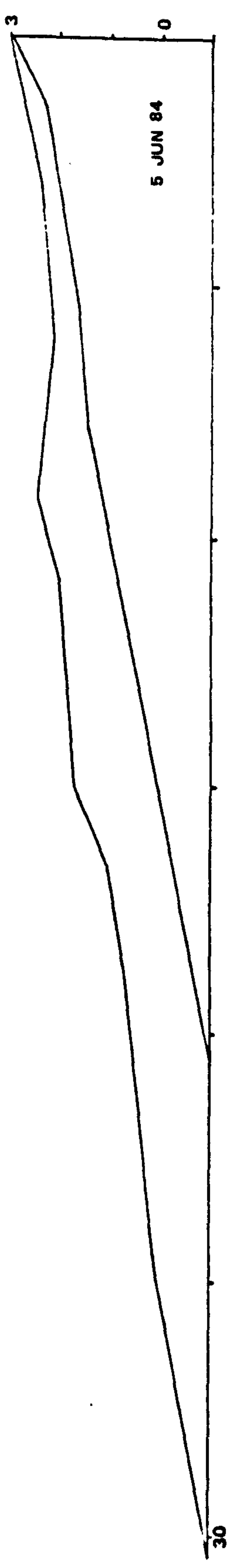
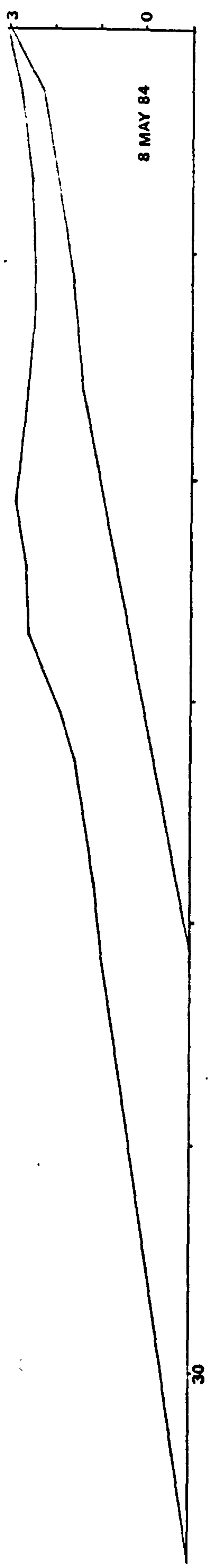
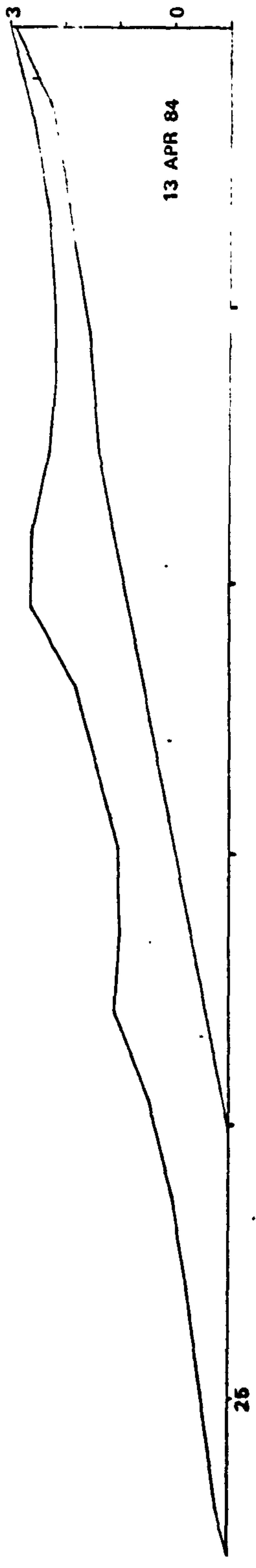
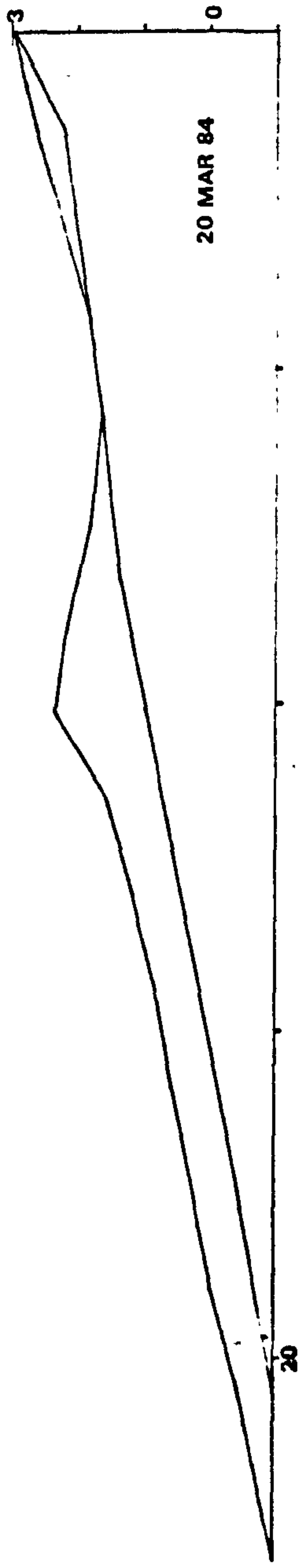


**RINGSTEAD PROFILE 3**  
**FIGURES IN METRES**  
**CD = CHART DATUM**

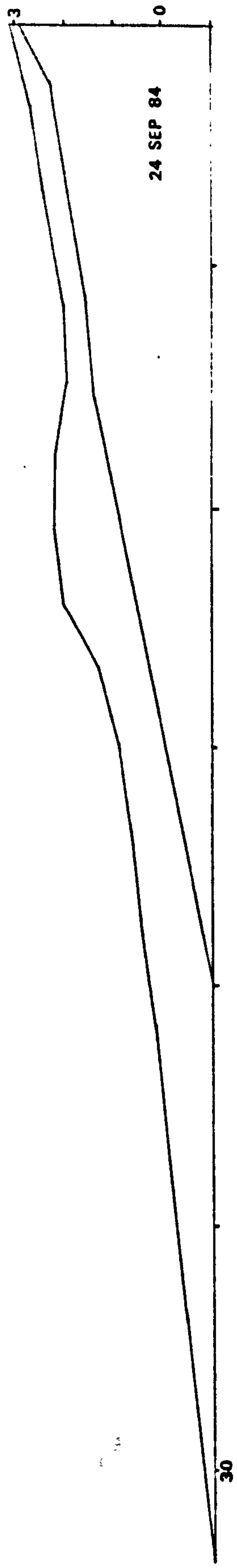
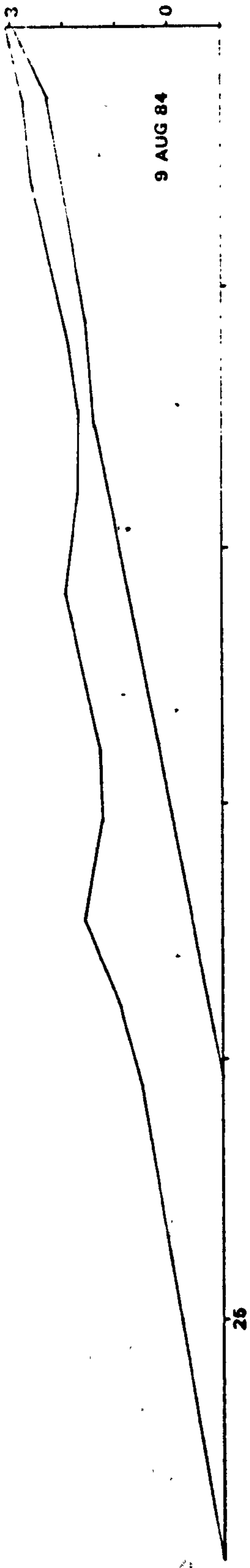
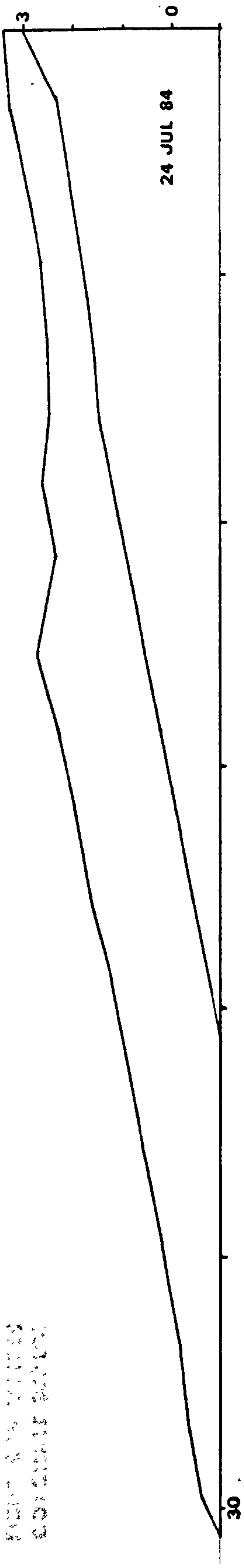




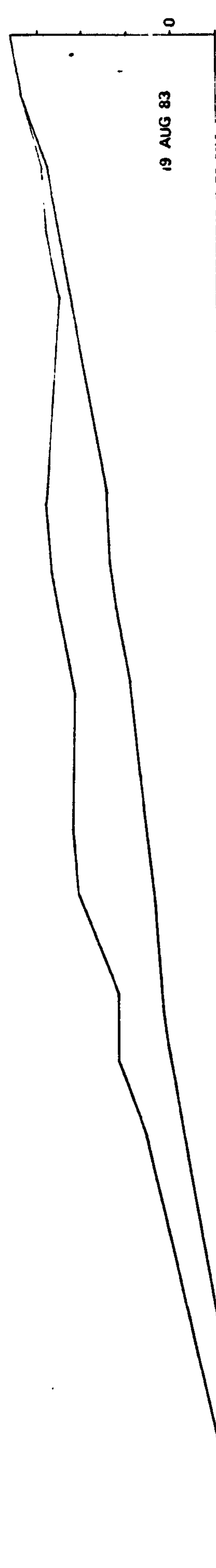
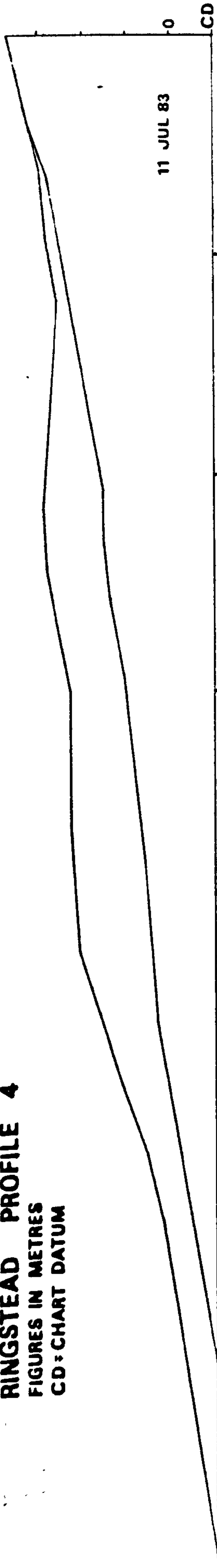


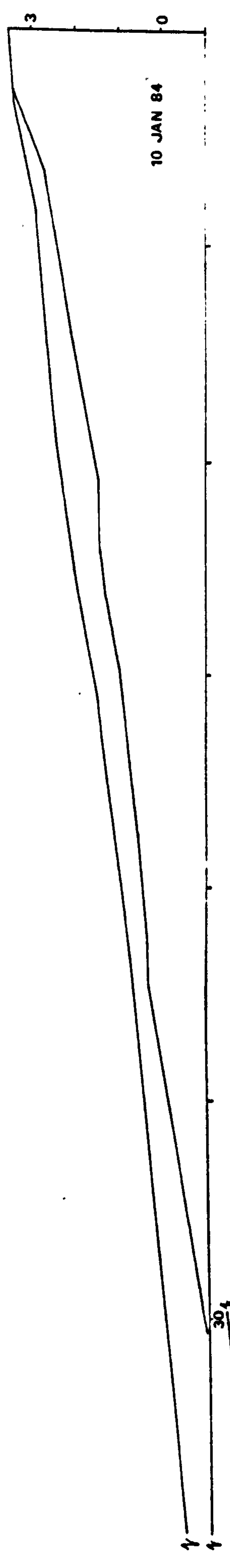
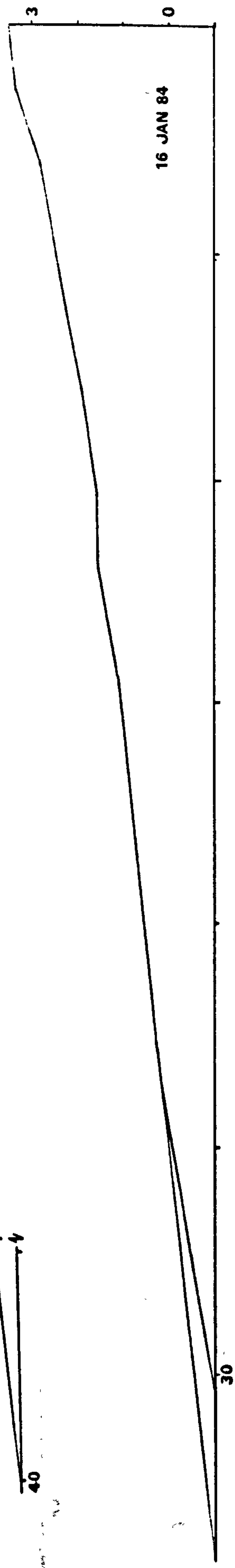
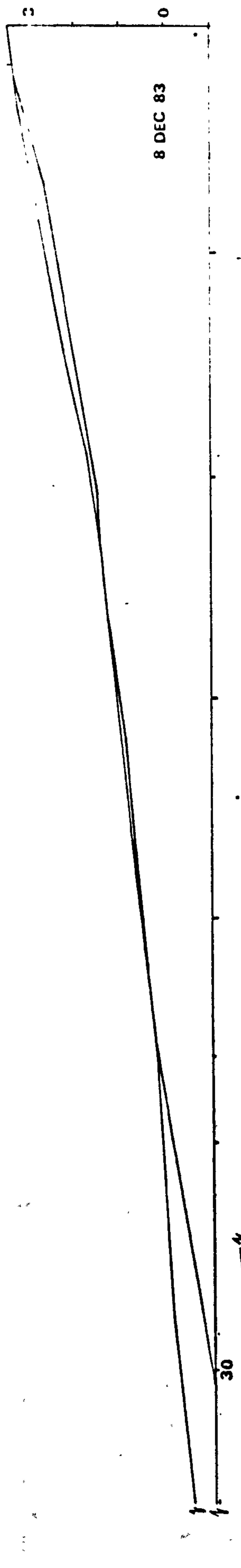
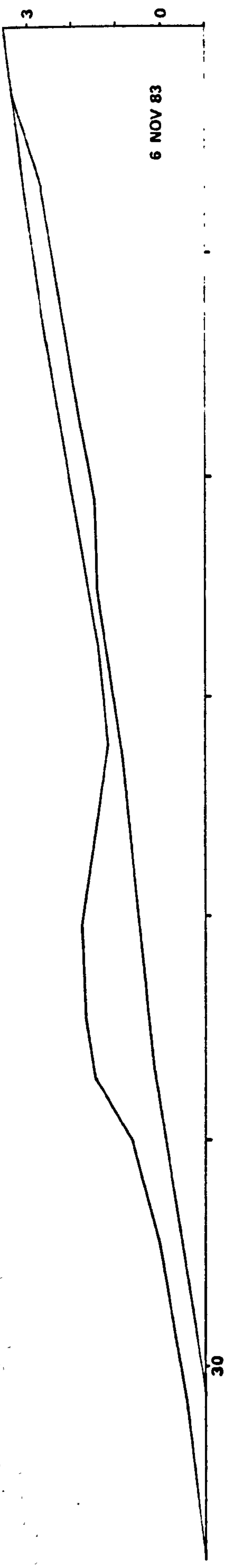


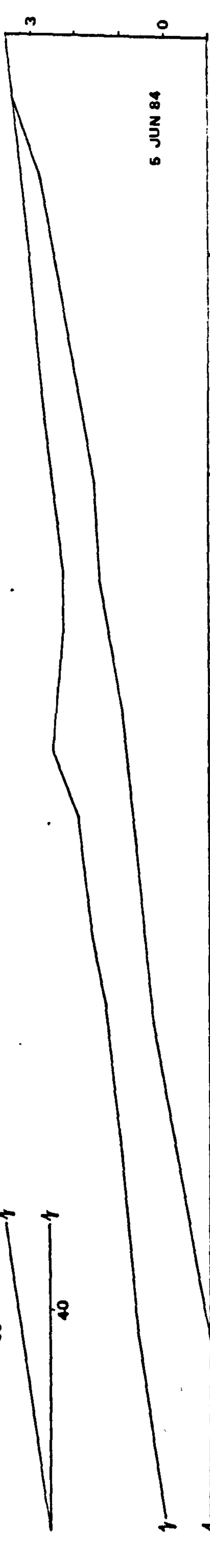
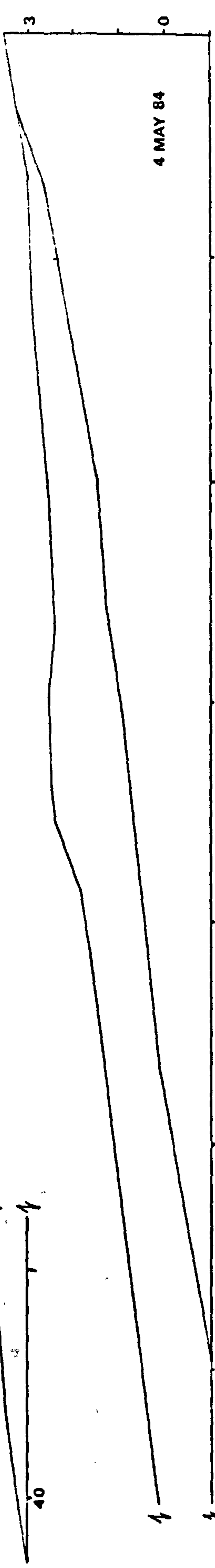
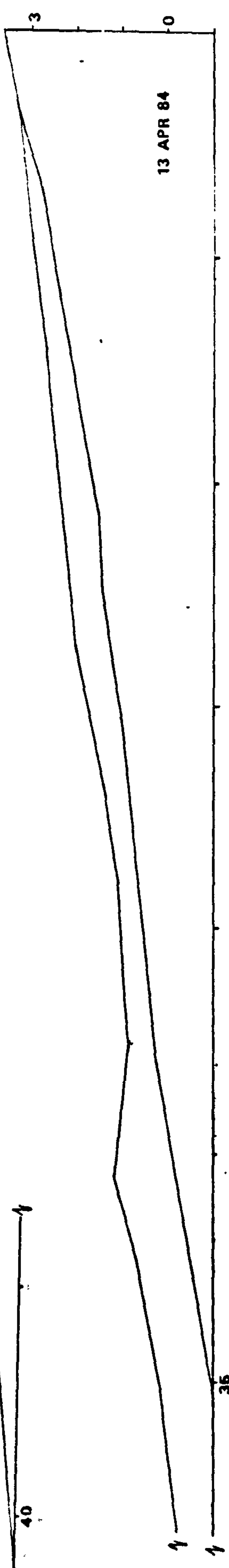
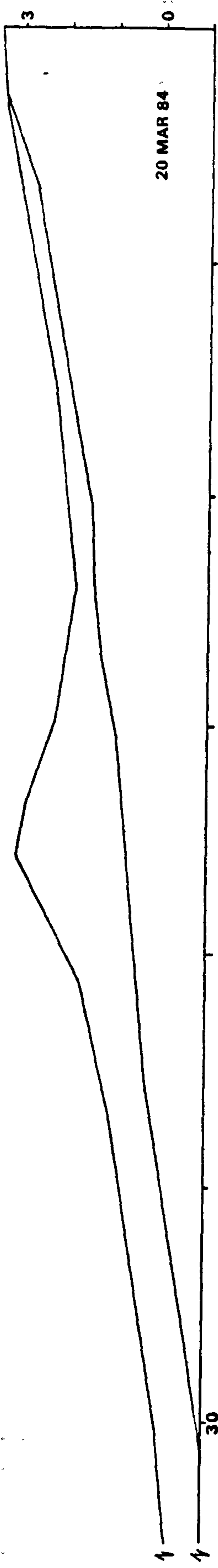
30 JUL 84  
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30 JUL 84



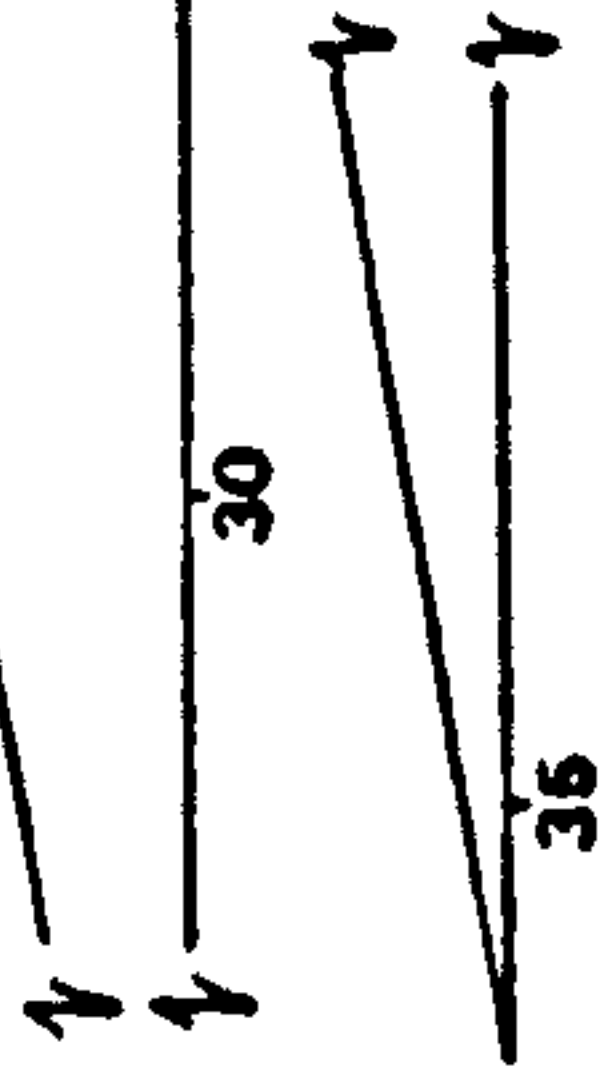
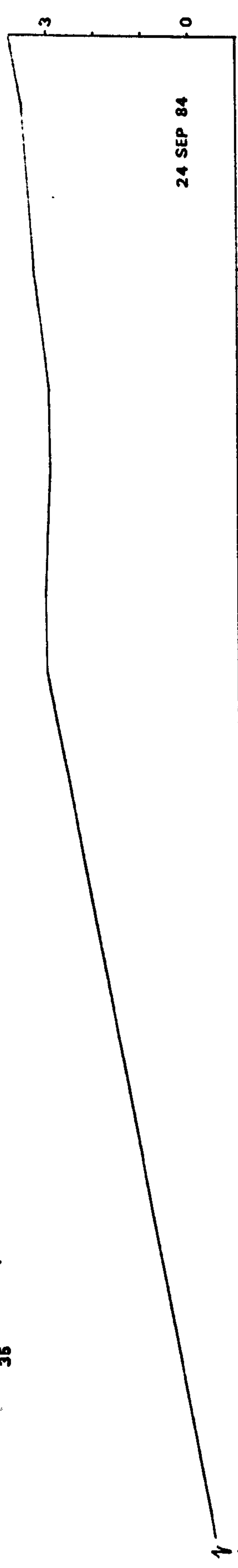
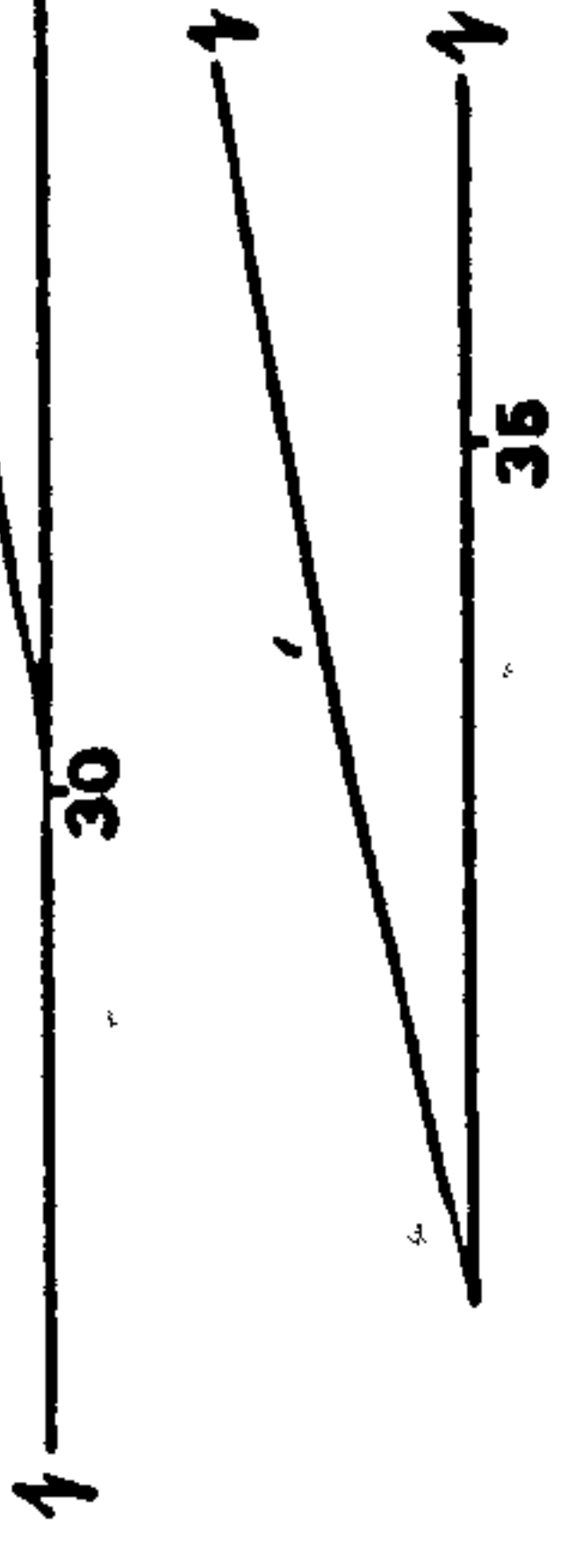
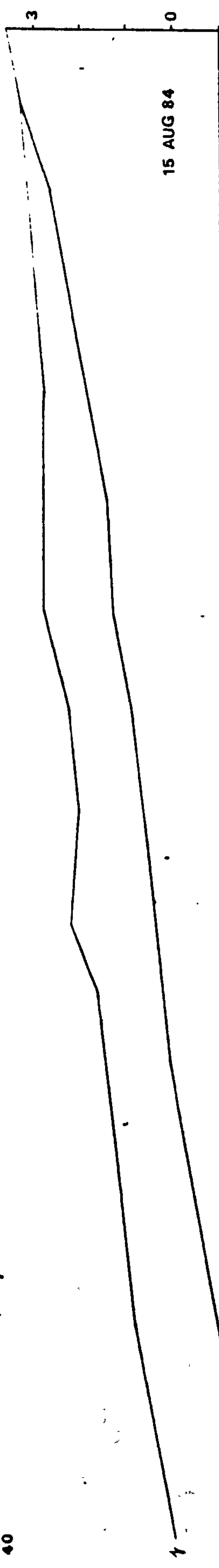
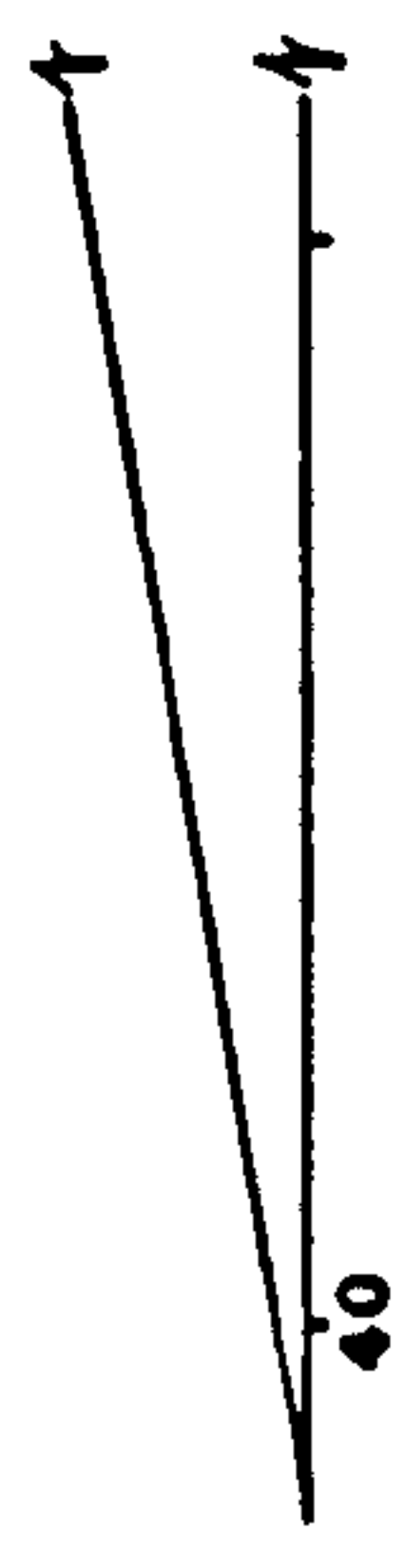
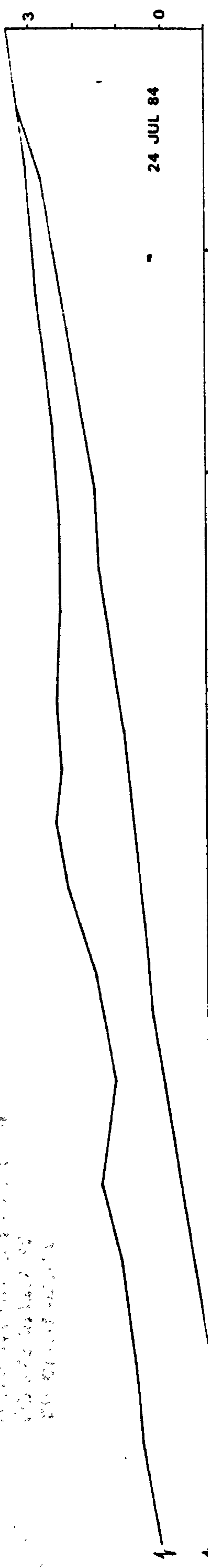
**RINGSTEAD PROFILE 4**  
**FIGURES IN METRES**  
**CD = CHART DATUM**



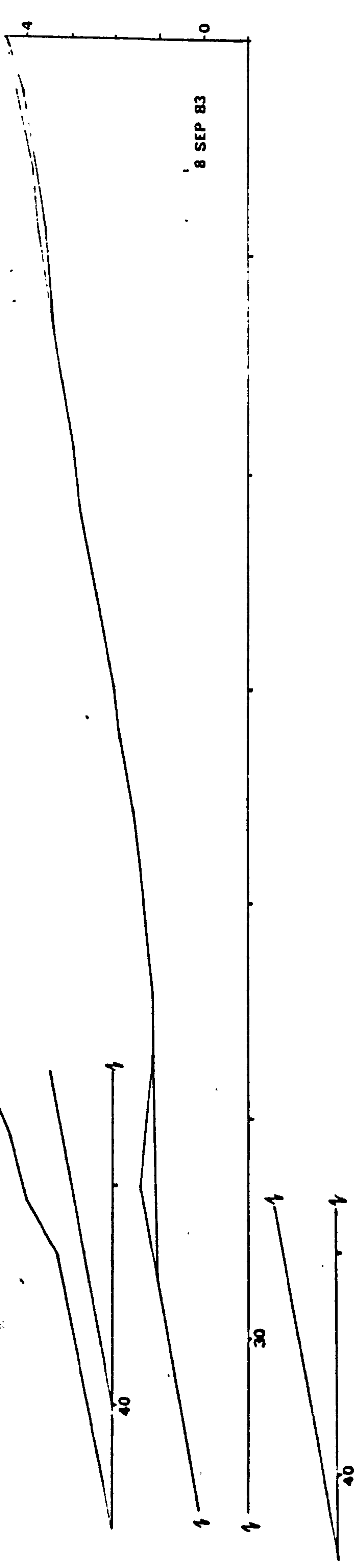
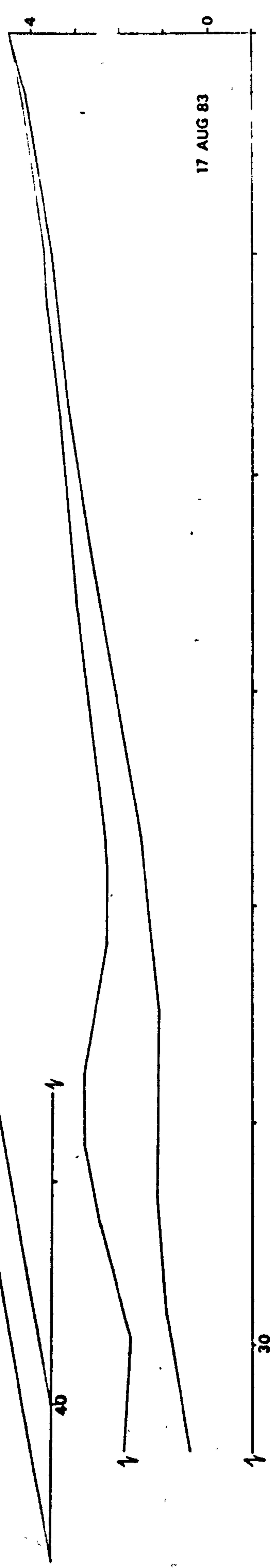
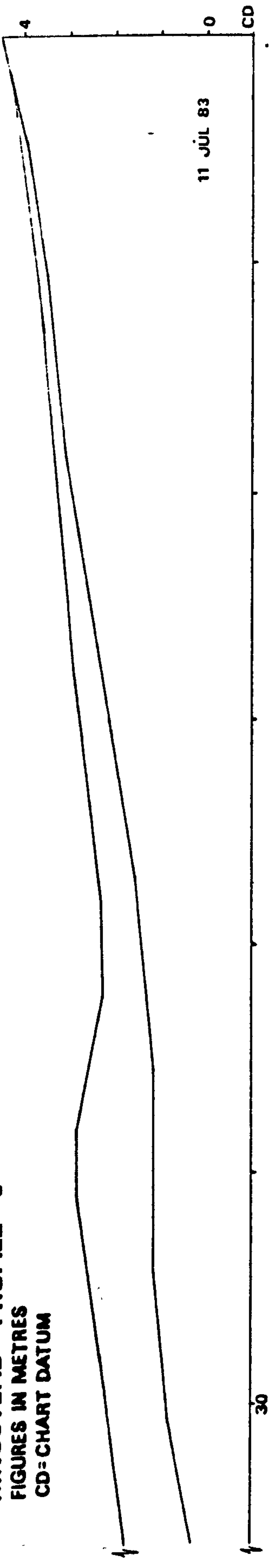


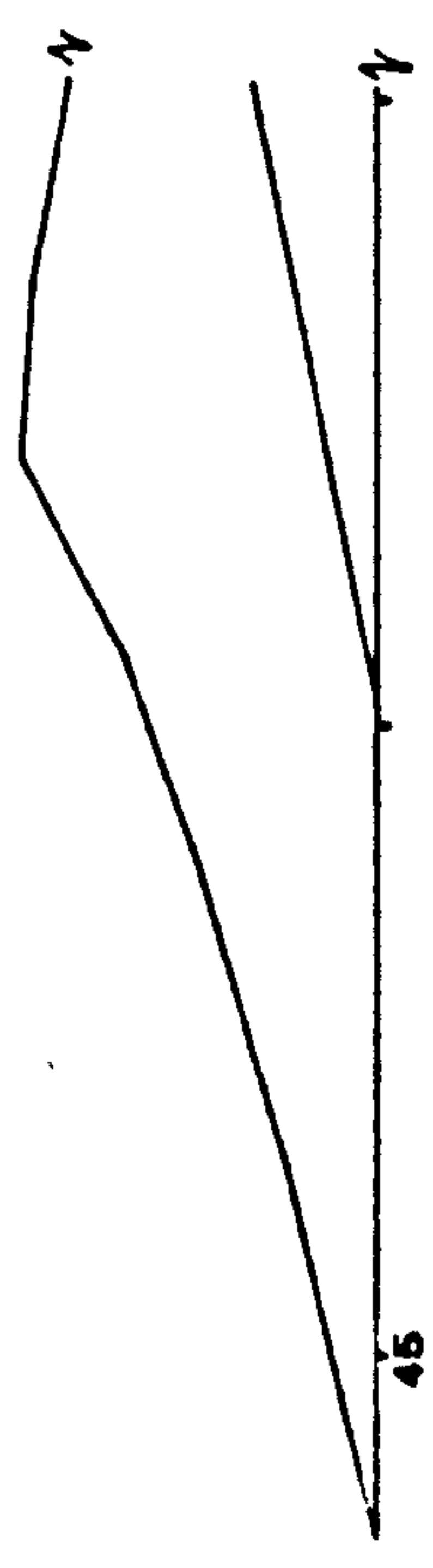
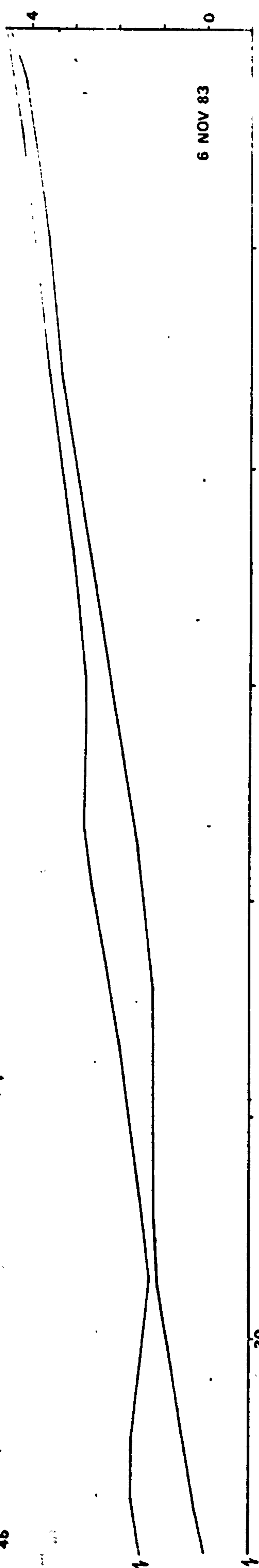
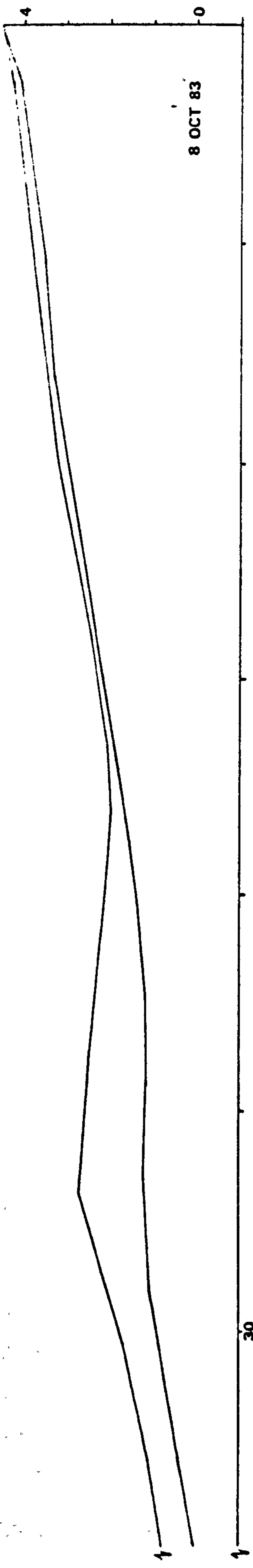


1984 JUL 24  
1984 AUG 15  
1984 SEP 24



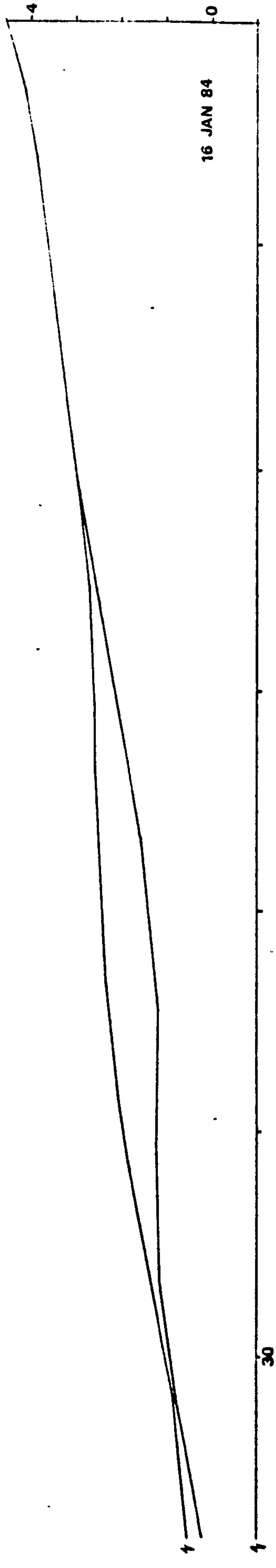
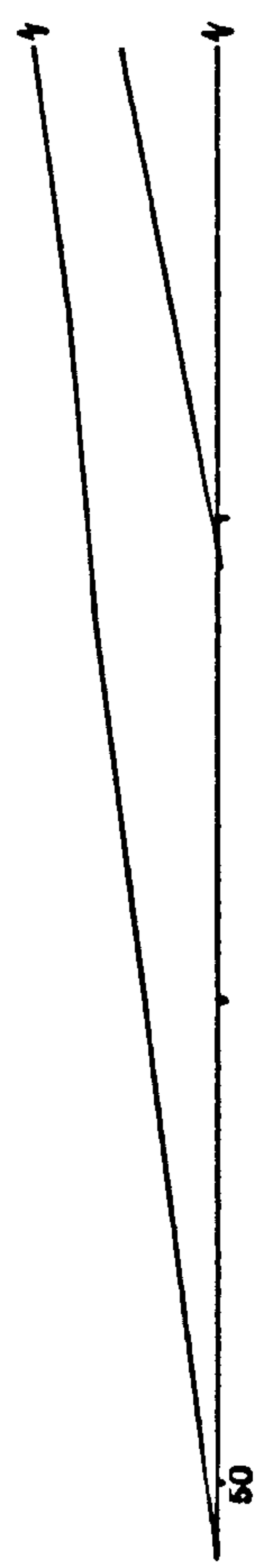
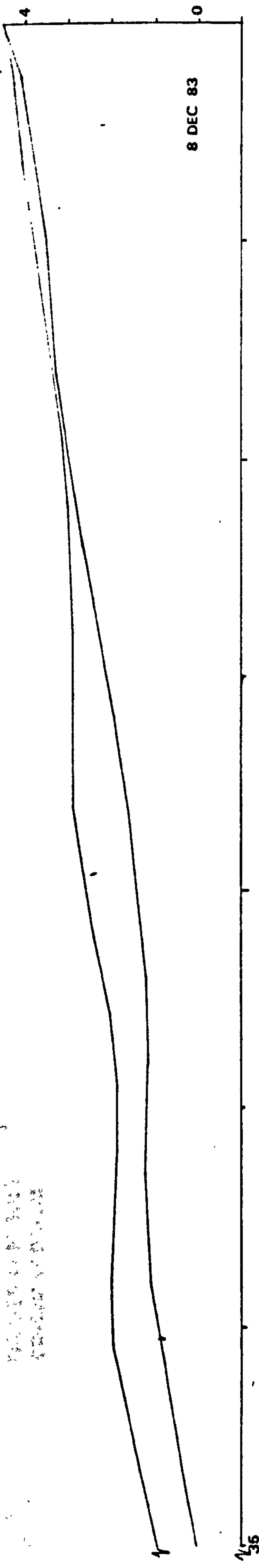
**RINGSTEAD PROFILE 5**  
**FIGURES IN METRES**  
**CD = CHART DATUM**



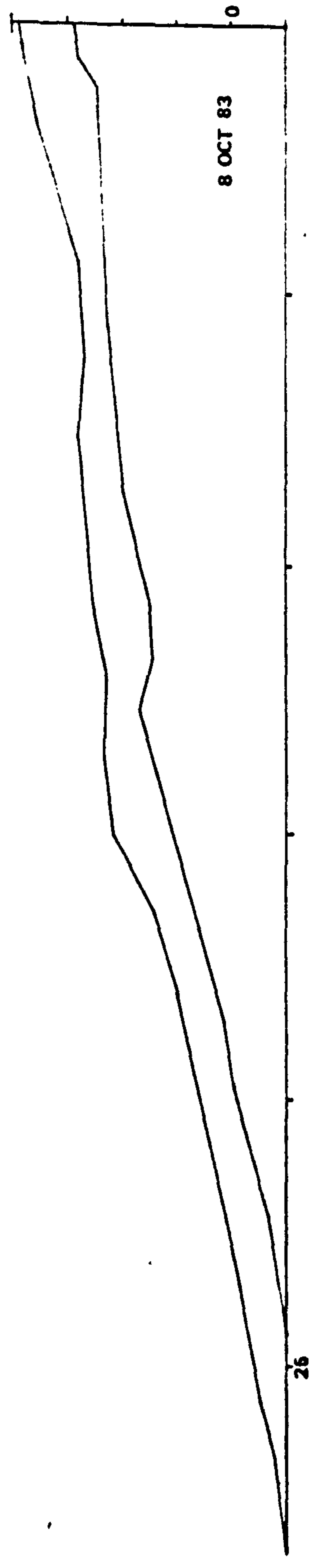
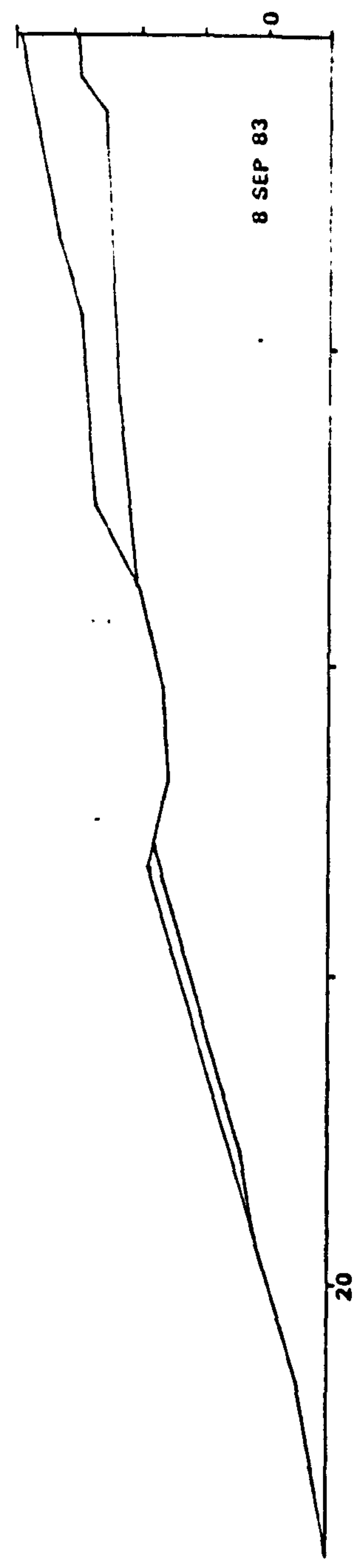
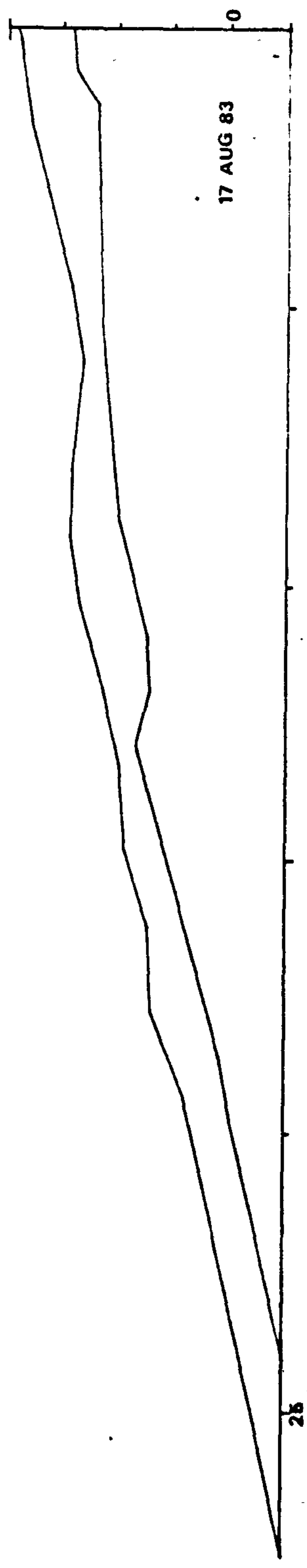
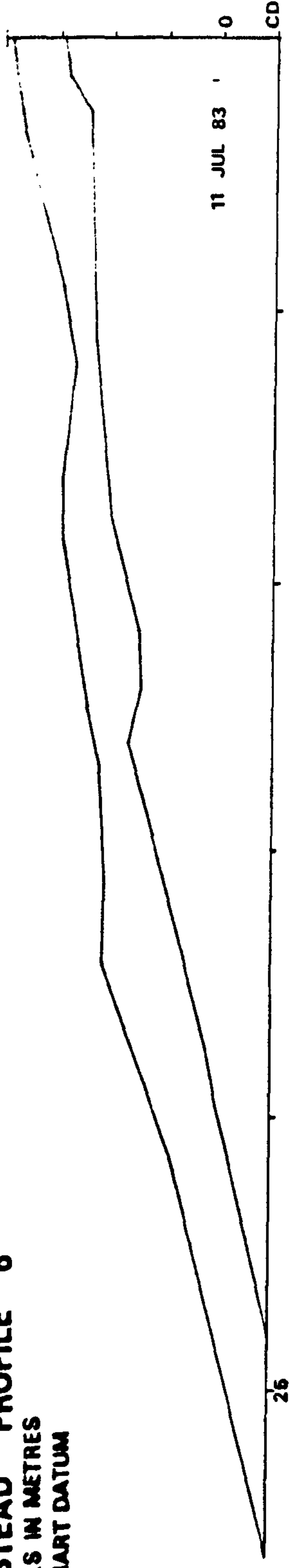


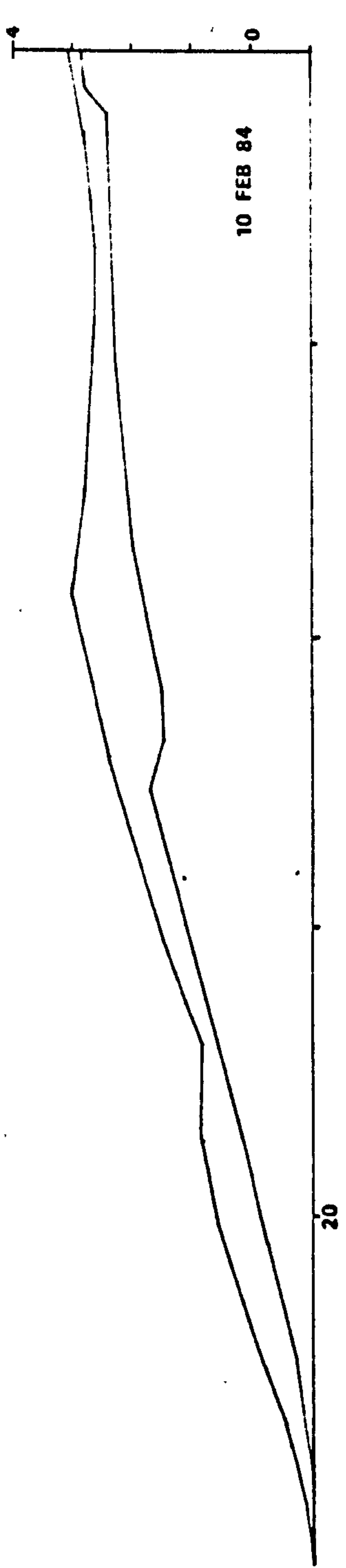
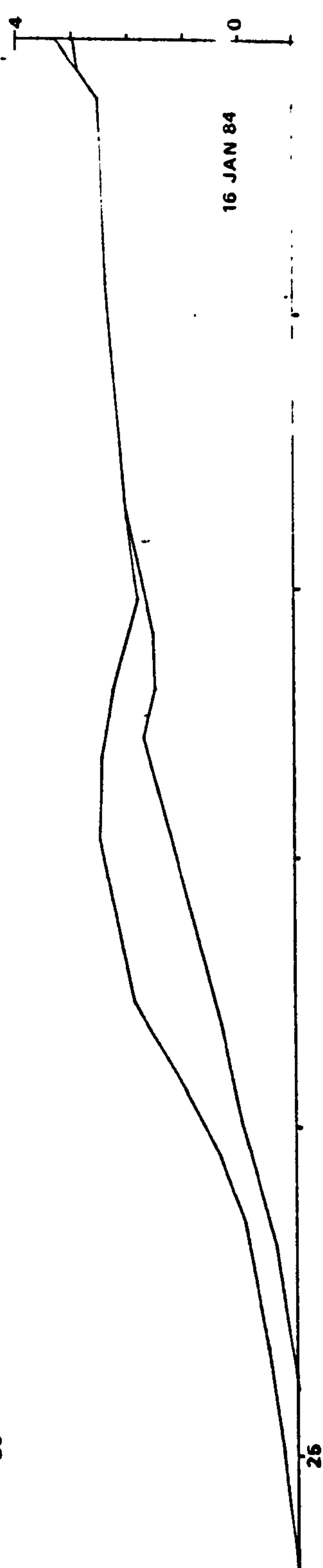
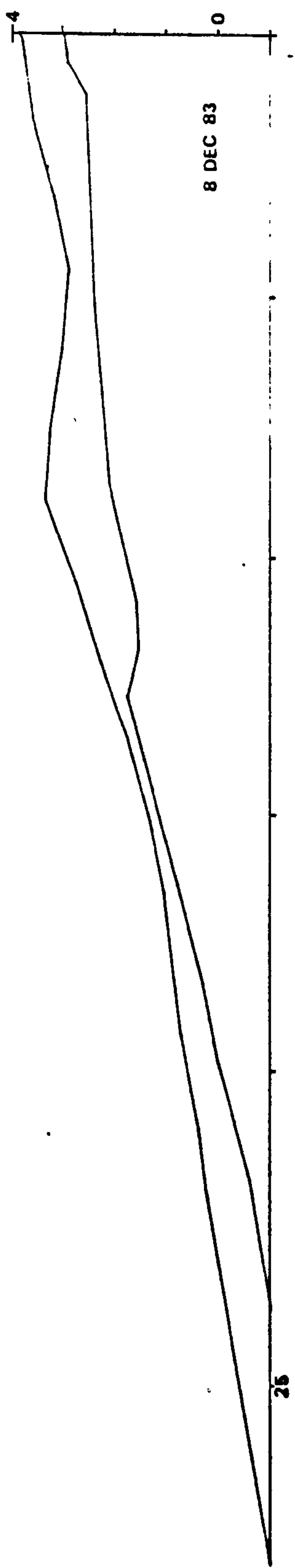
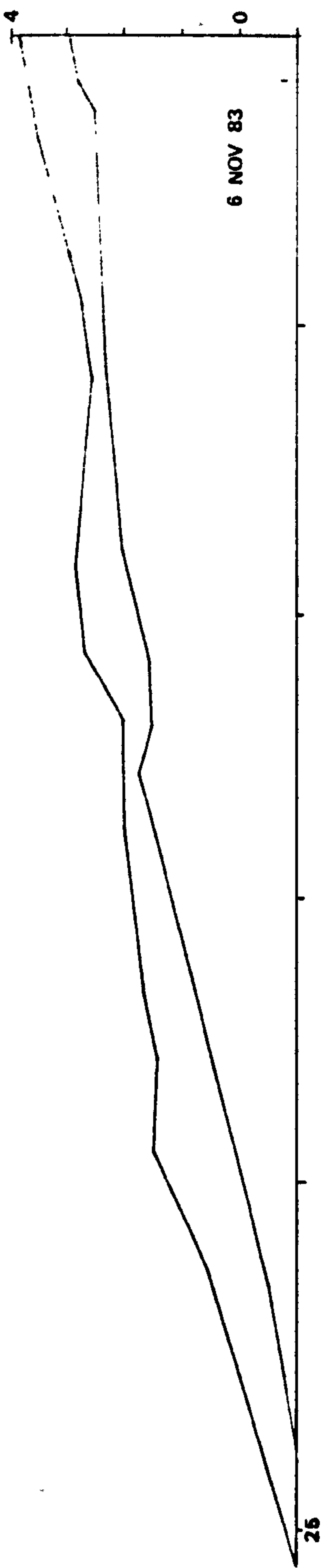


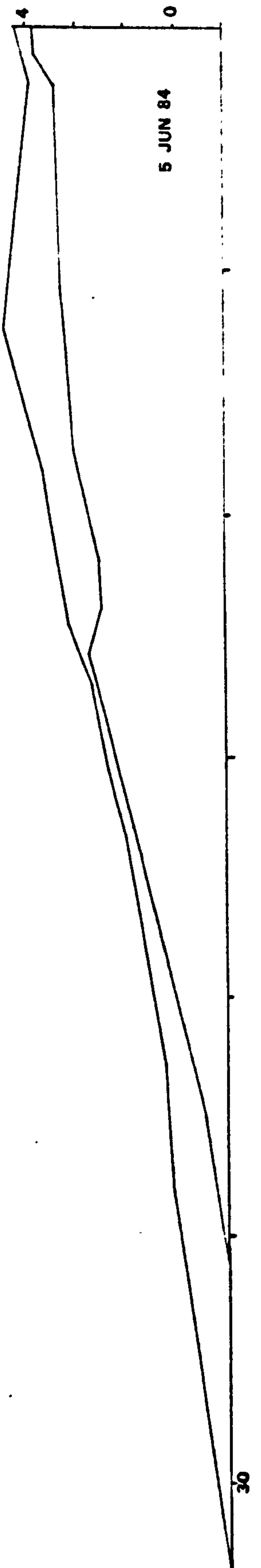
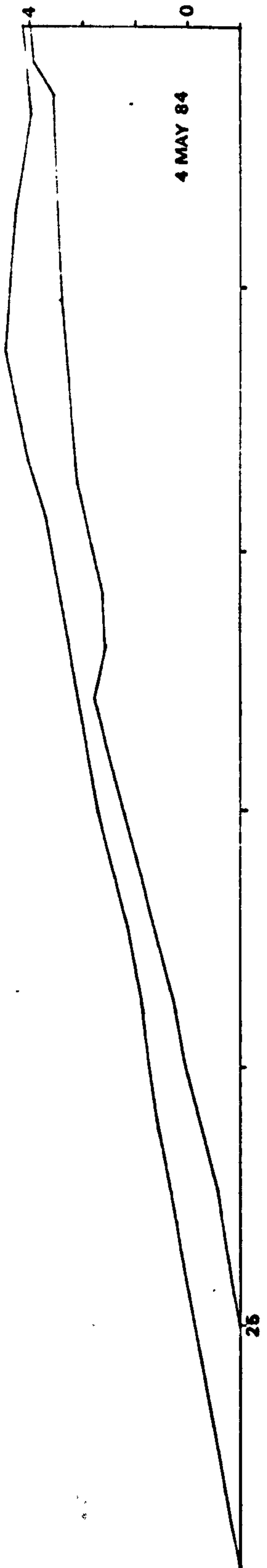
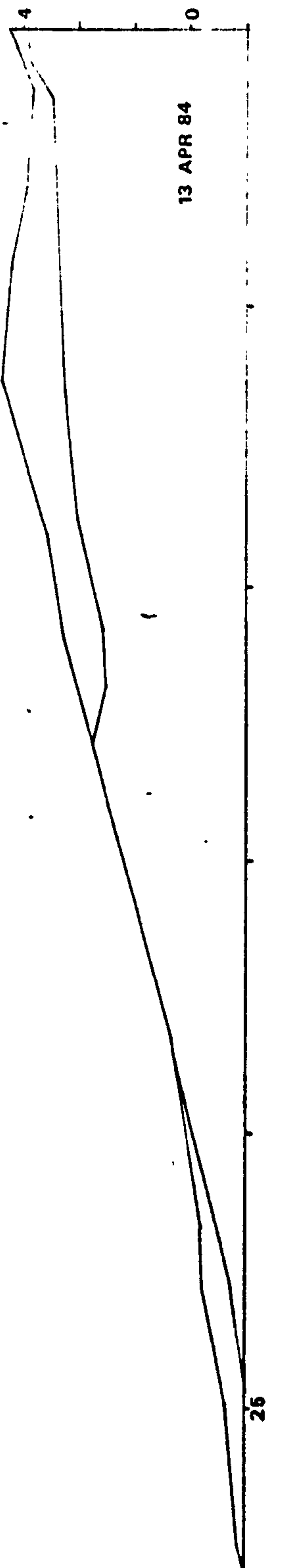
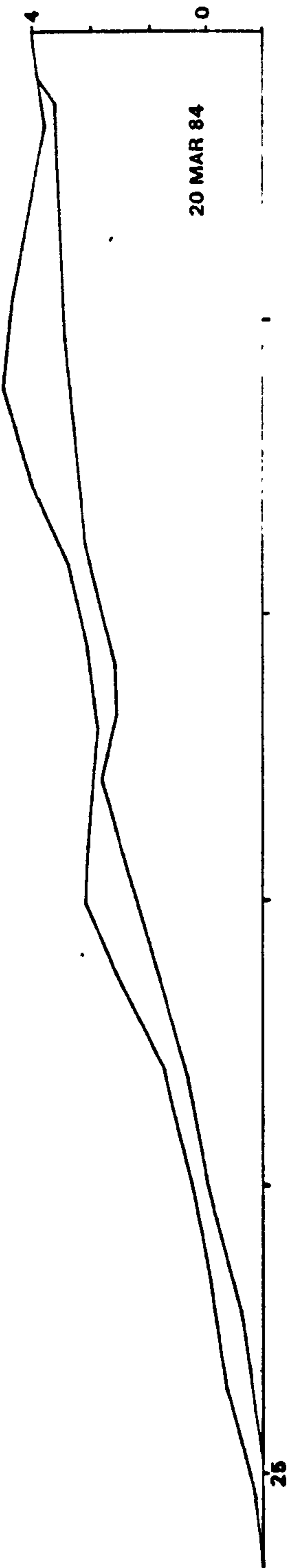
Handwritten notes in the left margin, including a date "1983" and other illegible text.



**RINGSTEAD PROFILE 6**  
**FIGURES IN METRES**  
**CD=CHART DATUM**







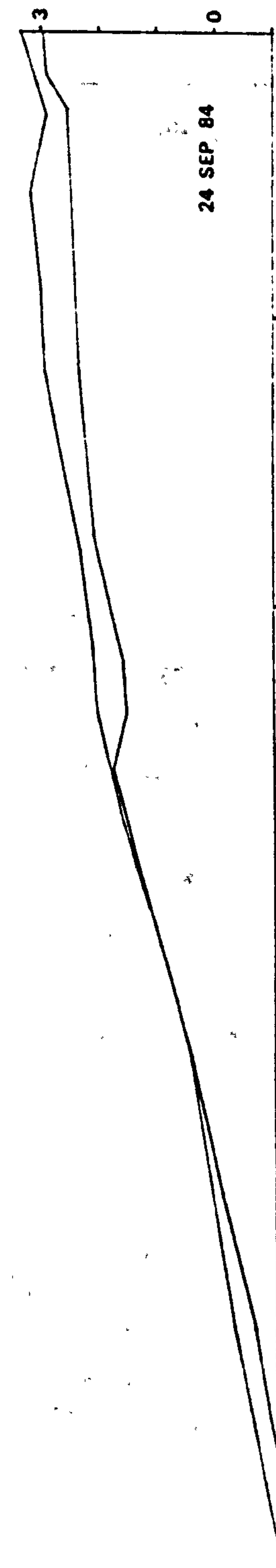
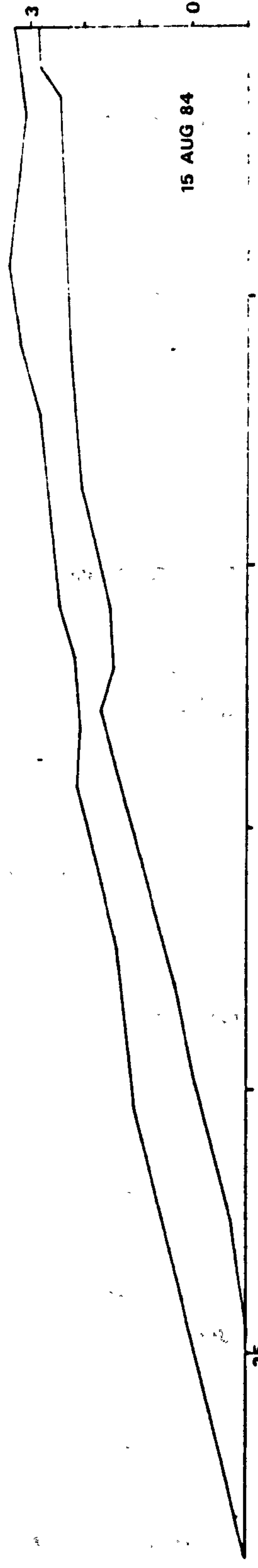
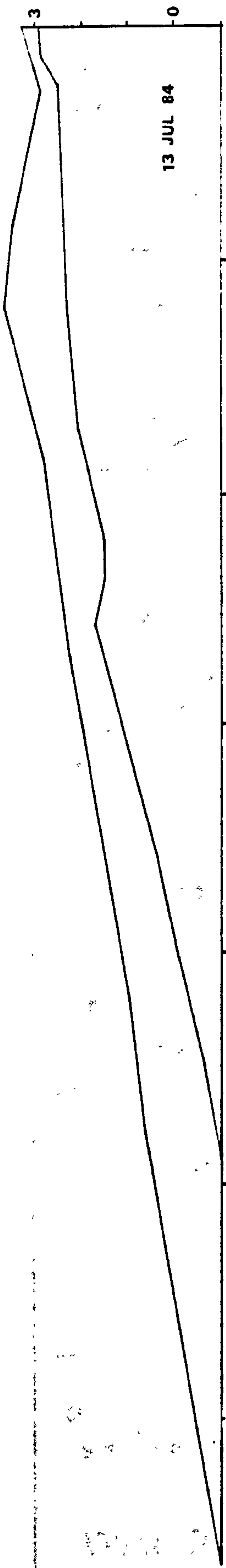
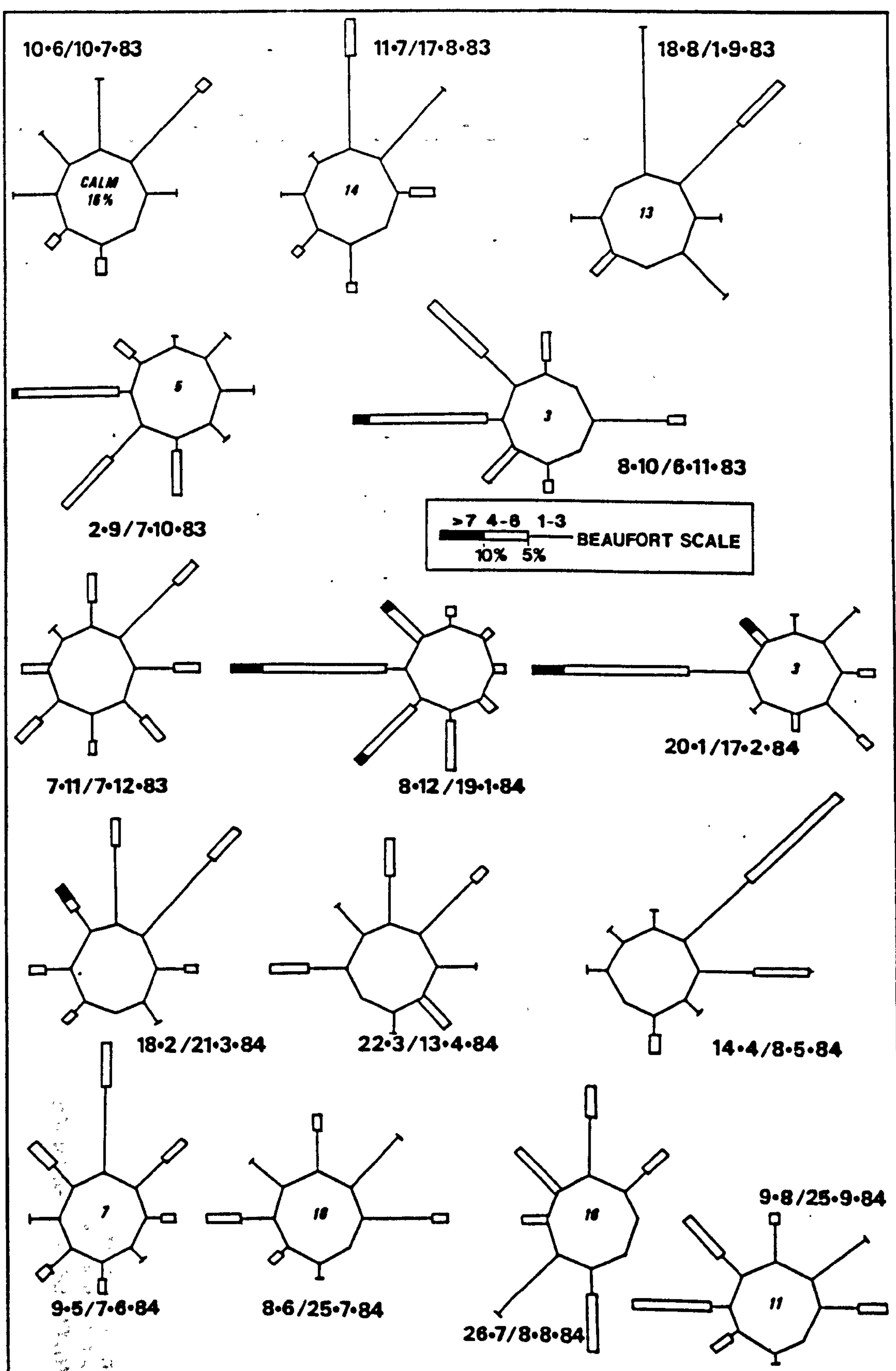


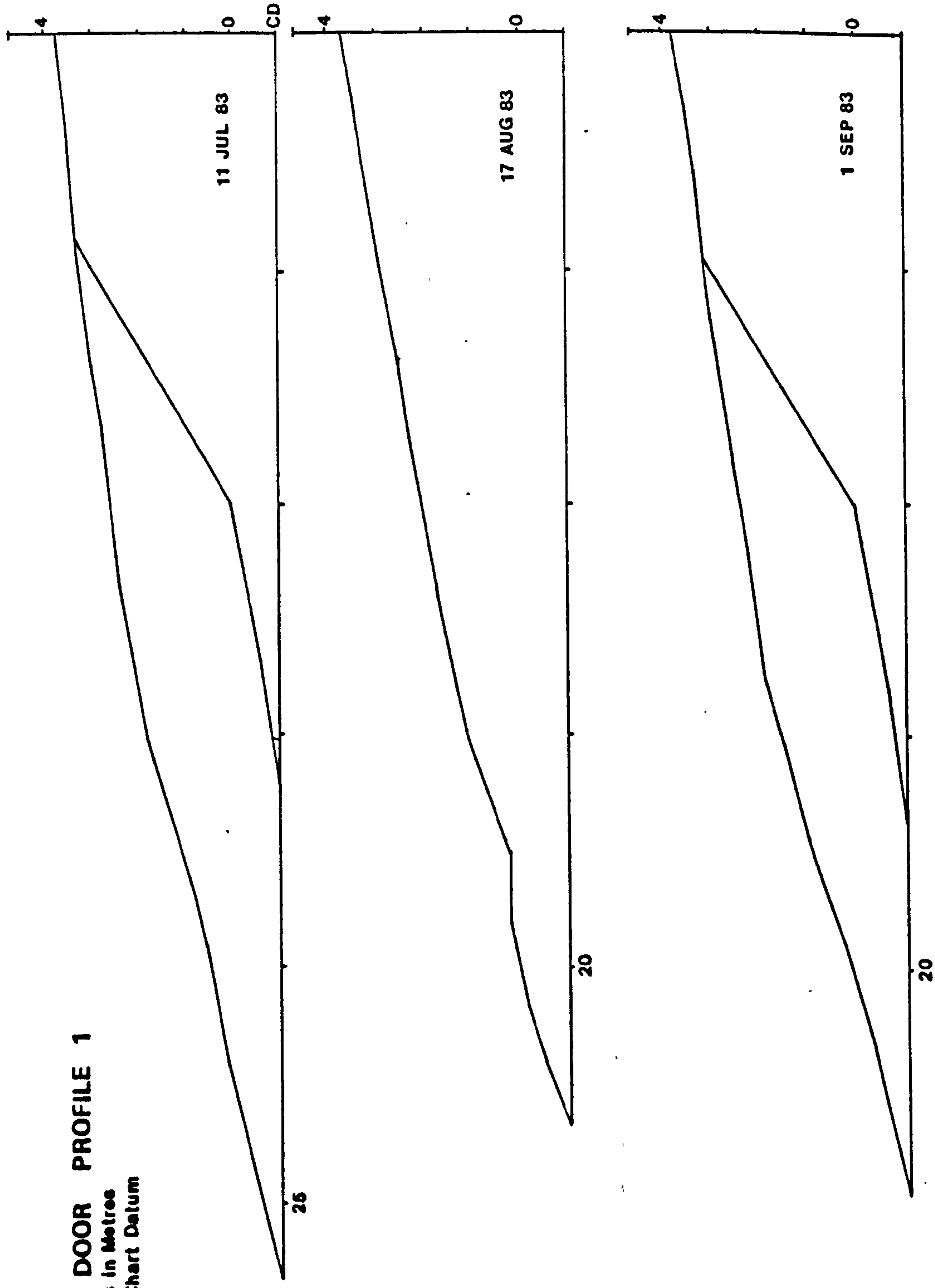
Figure 1. Cross-sections of the ice sheet on the north side of the glacier at 13 JUL 84, 15 AUG 84, and 24 SEP 84. The vertical axis is elevation in meters above sea level. The horizontal axis is distance in kilometers from the glacier margin.

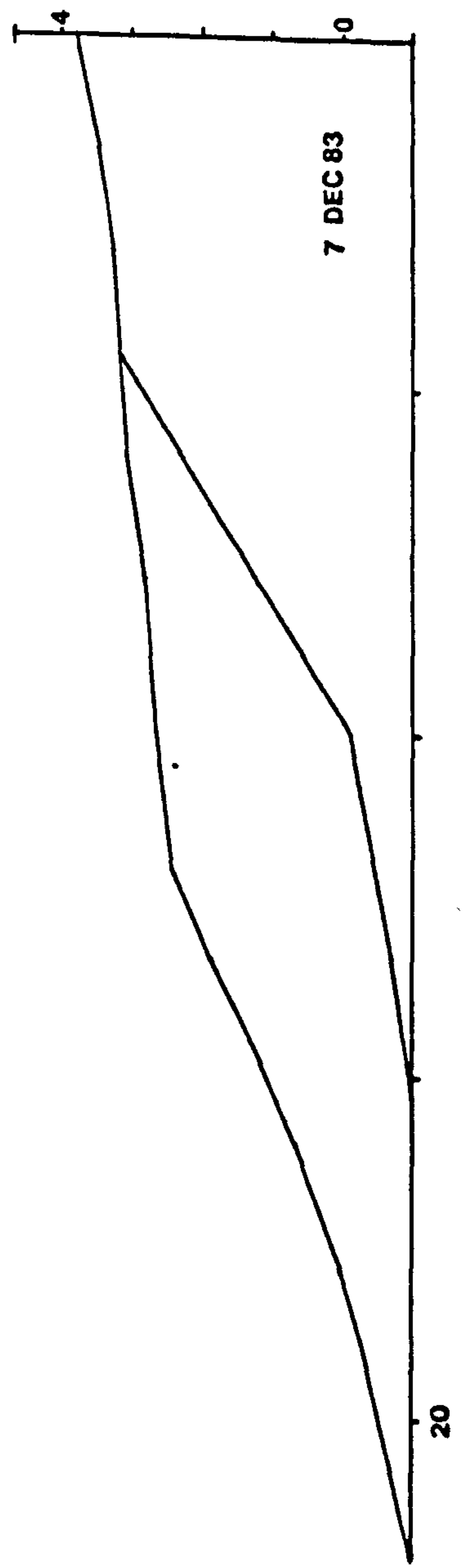
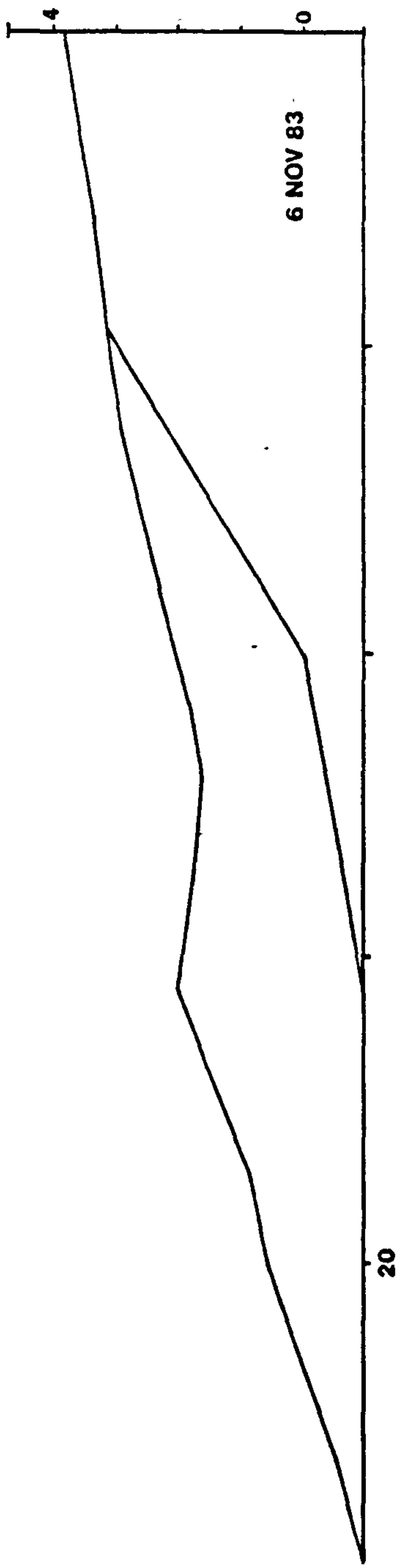
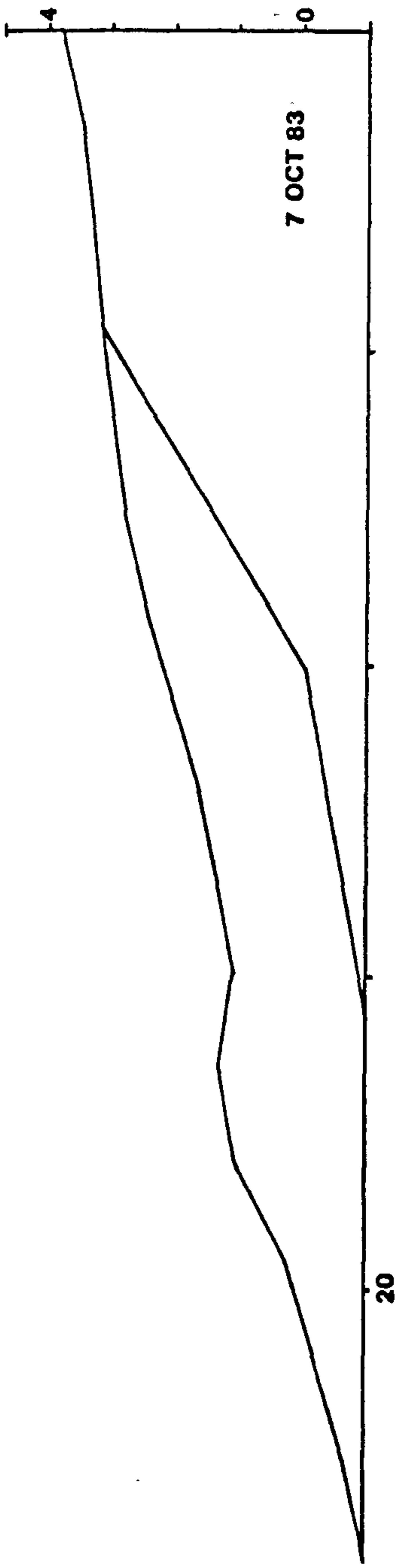


**Wind Roses between monthly beach surveys – DURDLE DOOR & MAN O' WAR**

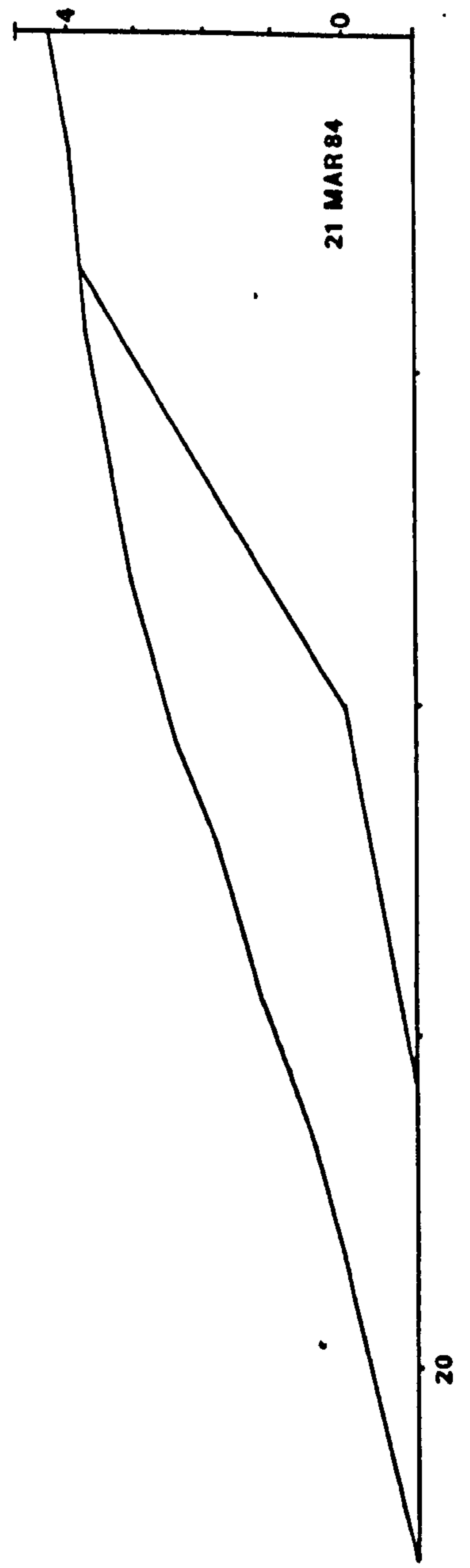
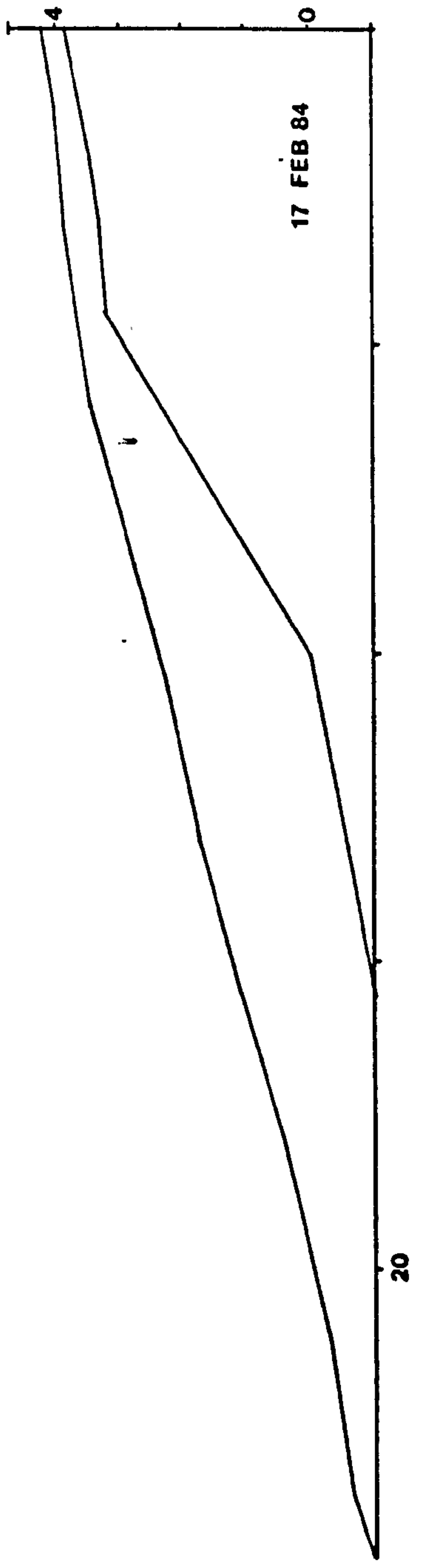
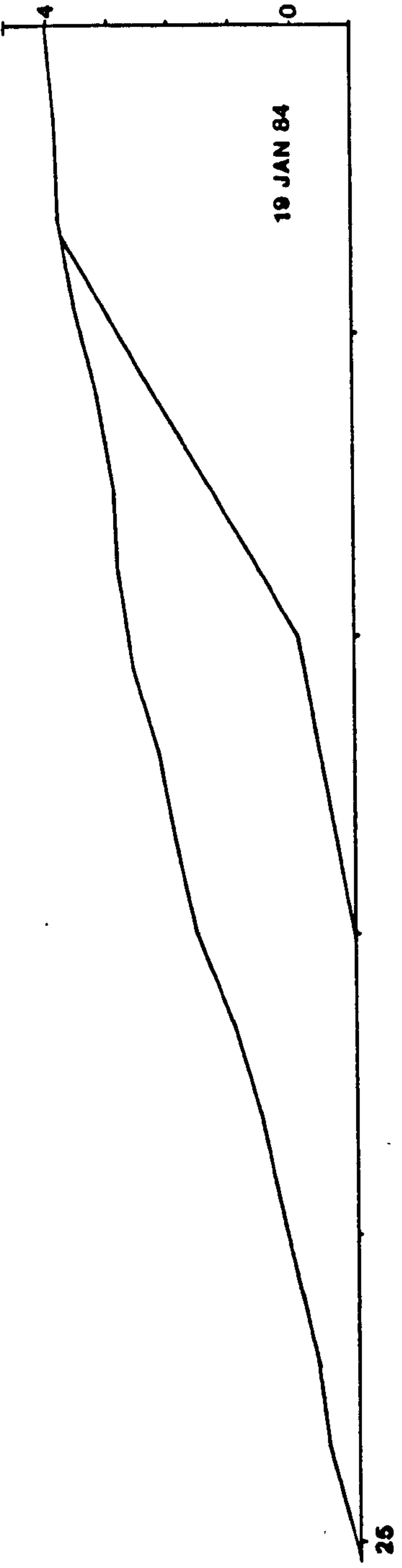
# DURDLE DOOR PROFILE 1

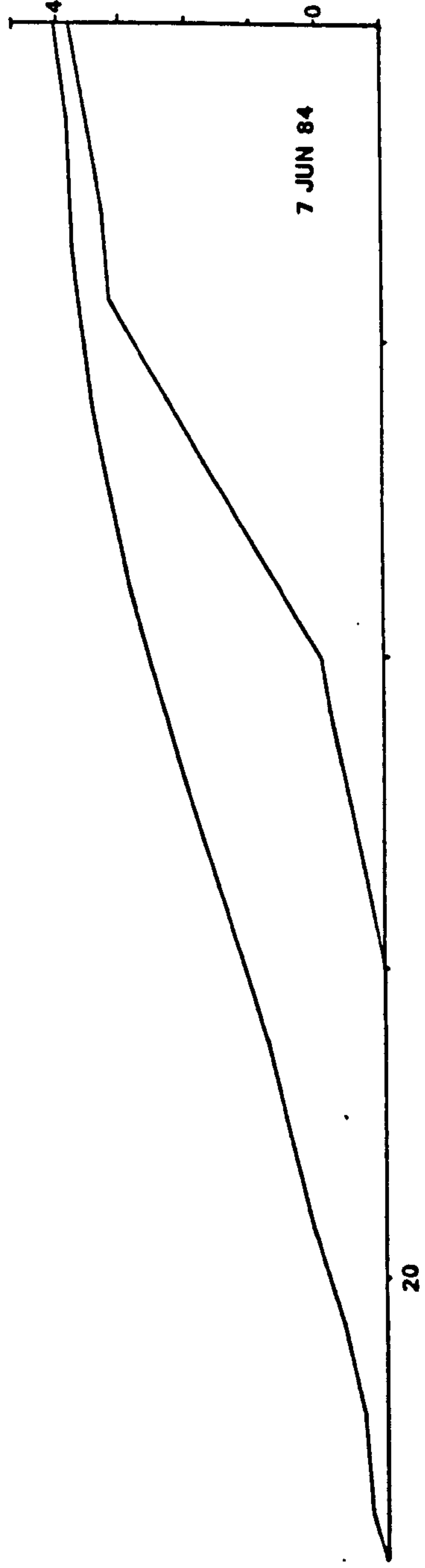
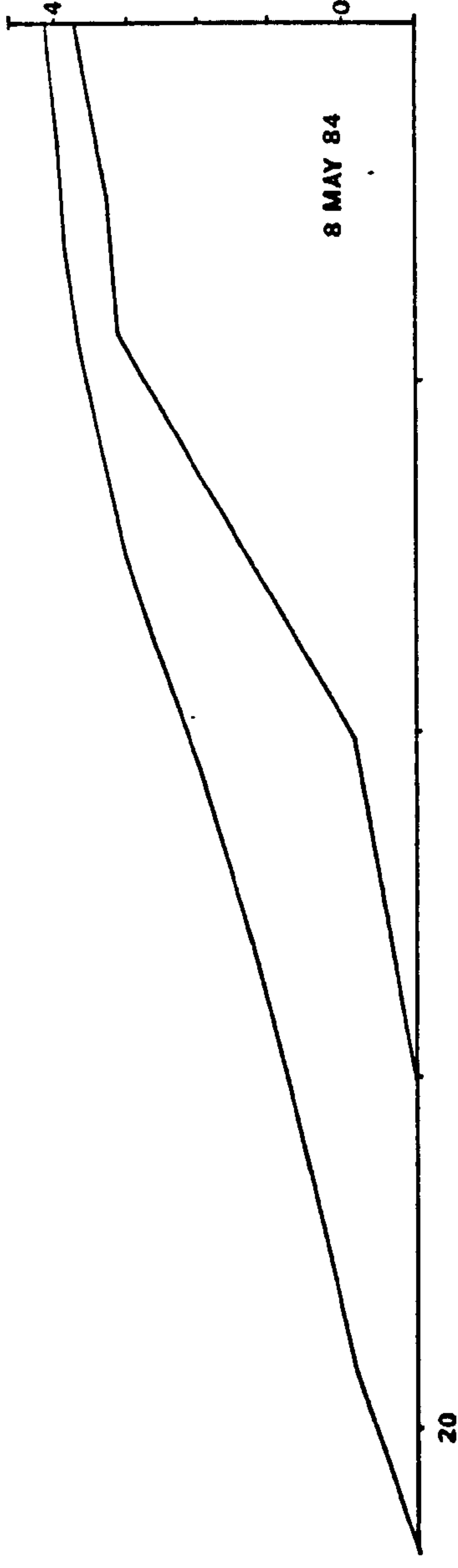
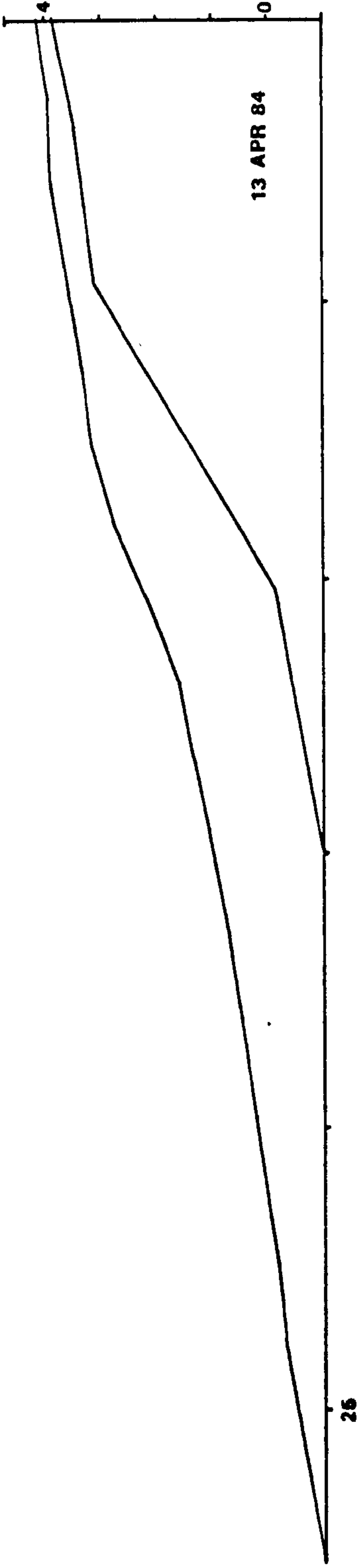
Figures in Metres  
CD = Chart Datum

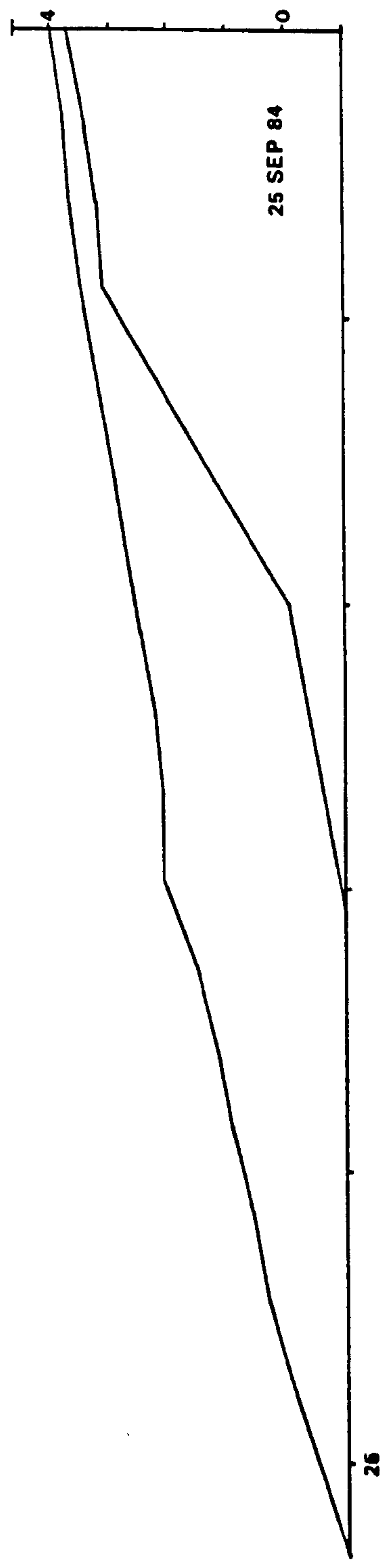
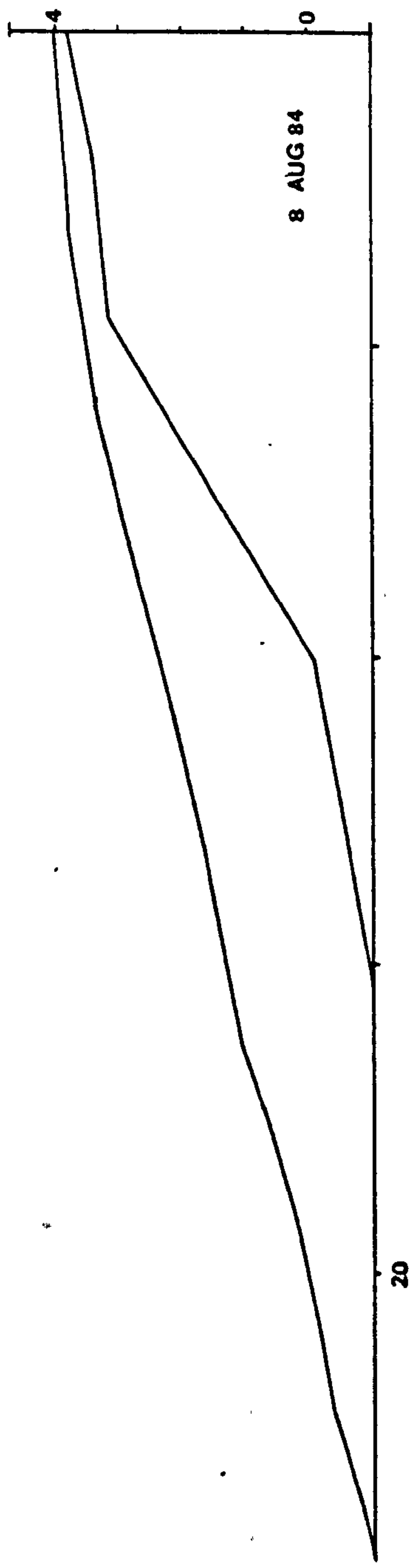
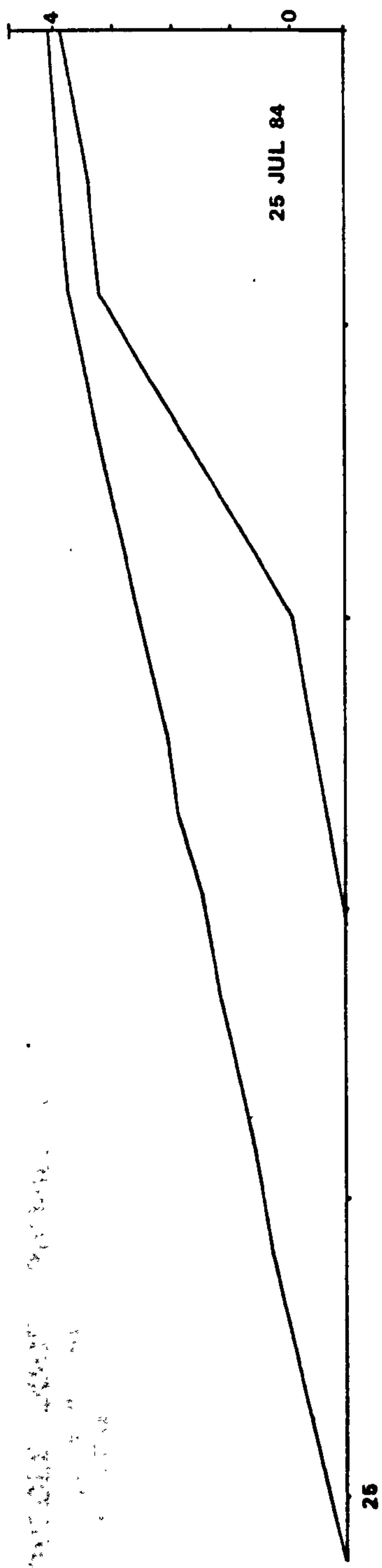






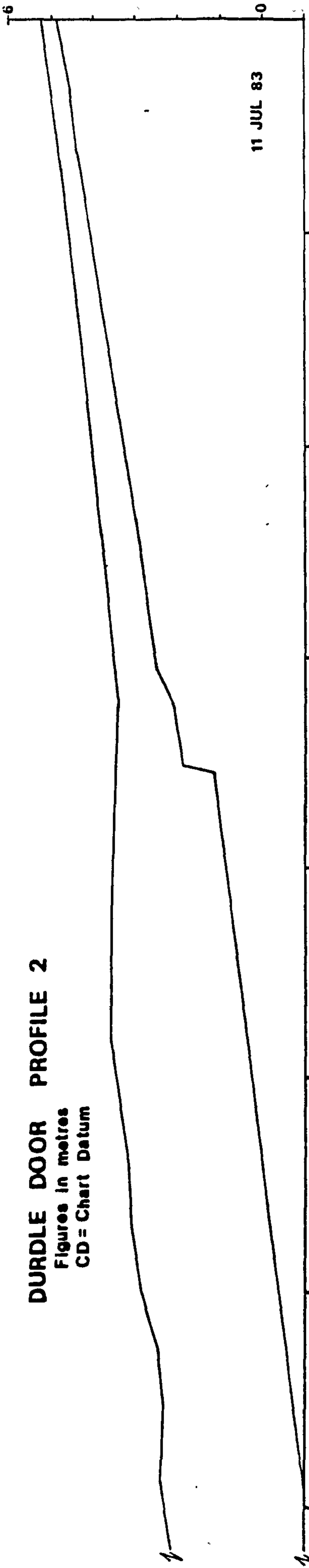






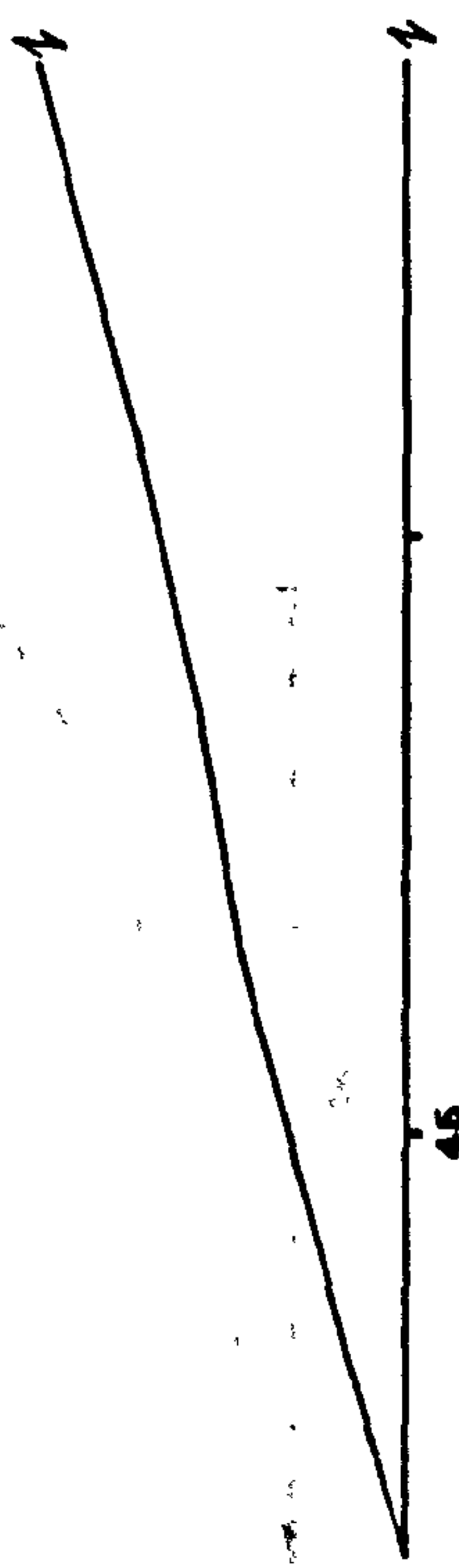
# DURDLE DOOR PROFILE 2

Figures in metres  
CD = Chart Datum

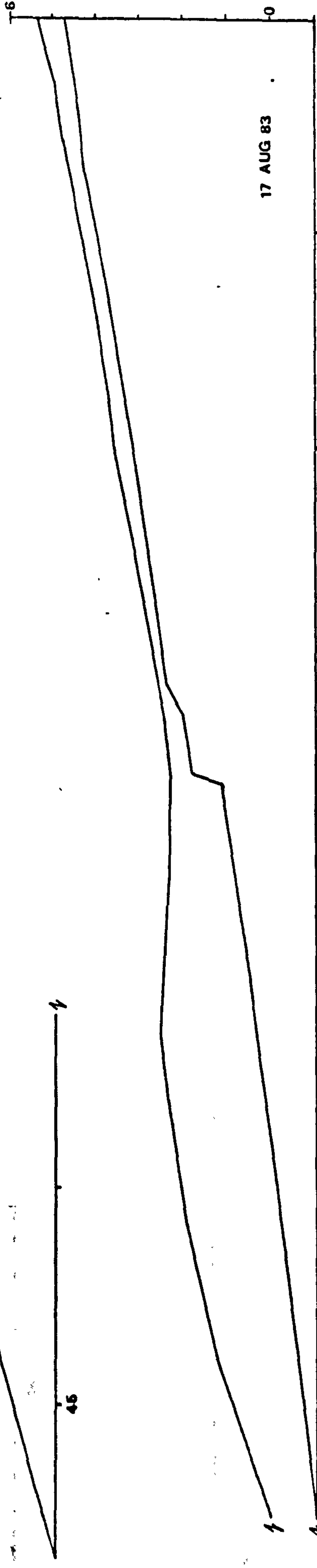


11 JUL 83

35

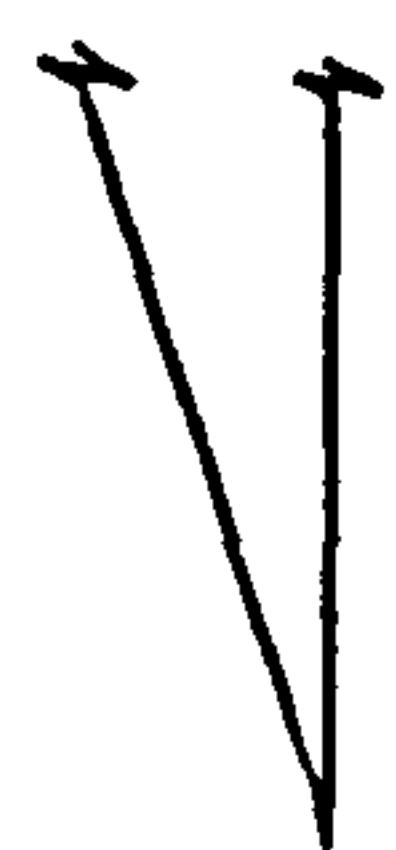


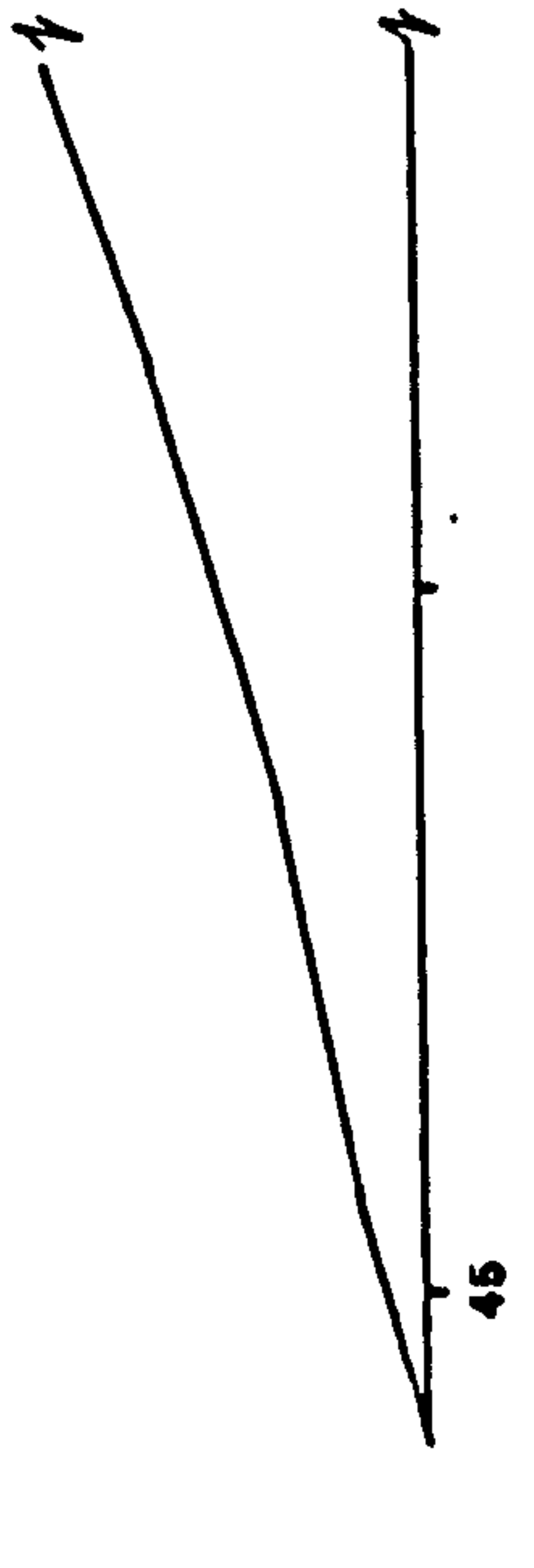
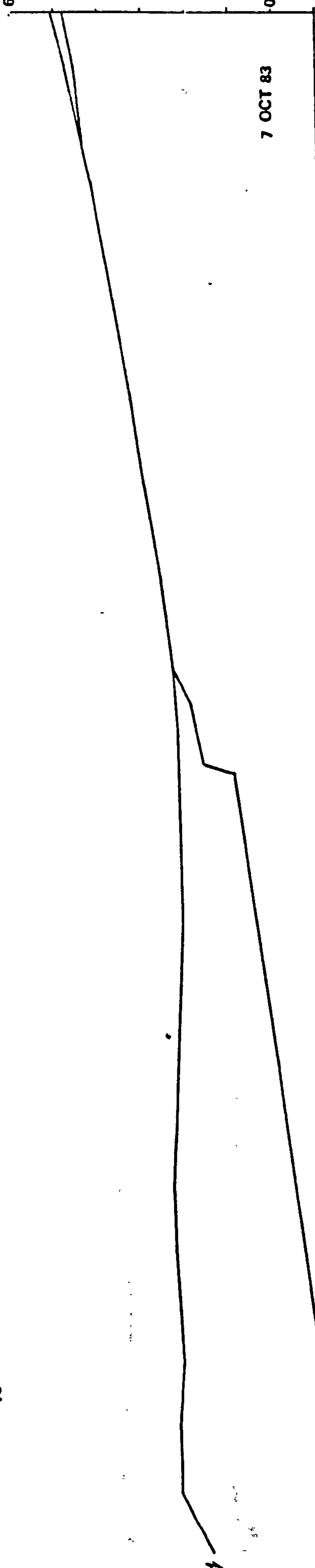
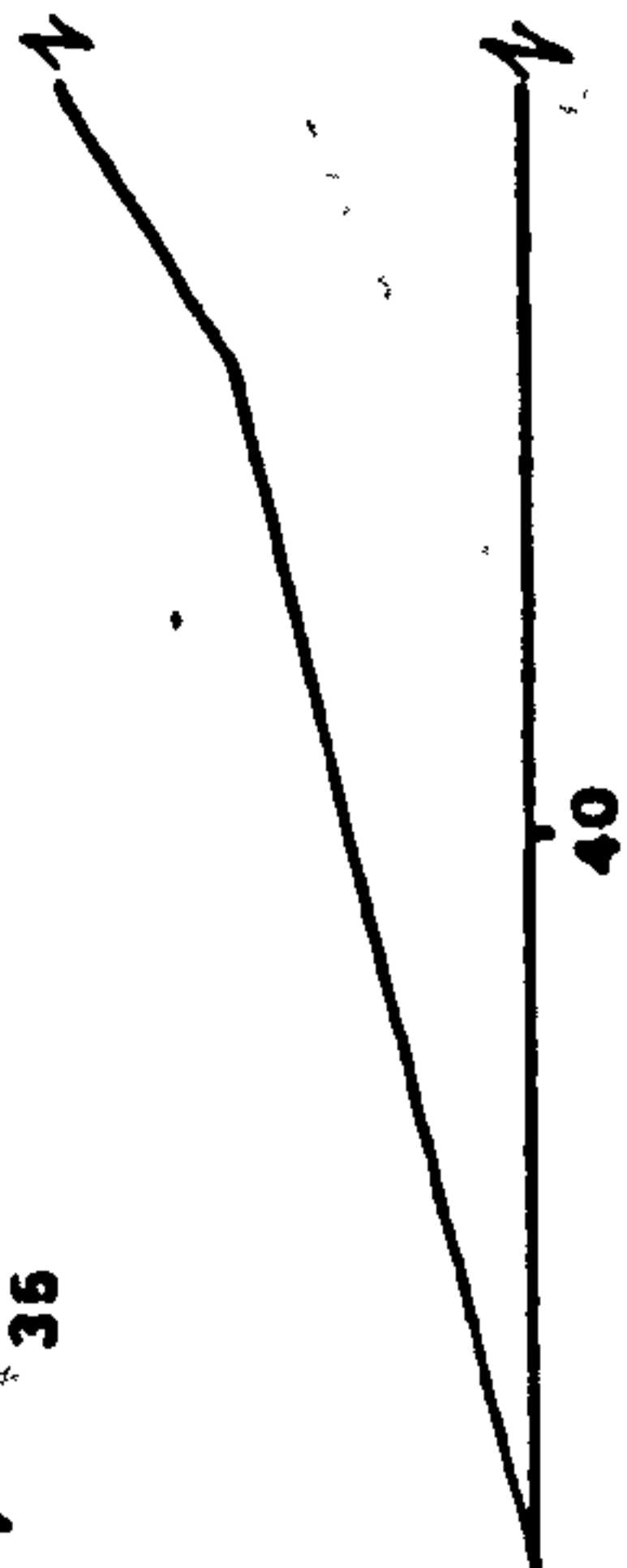
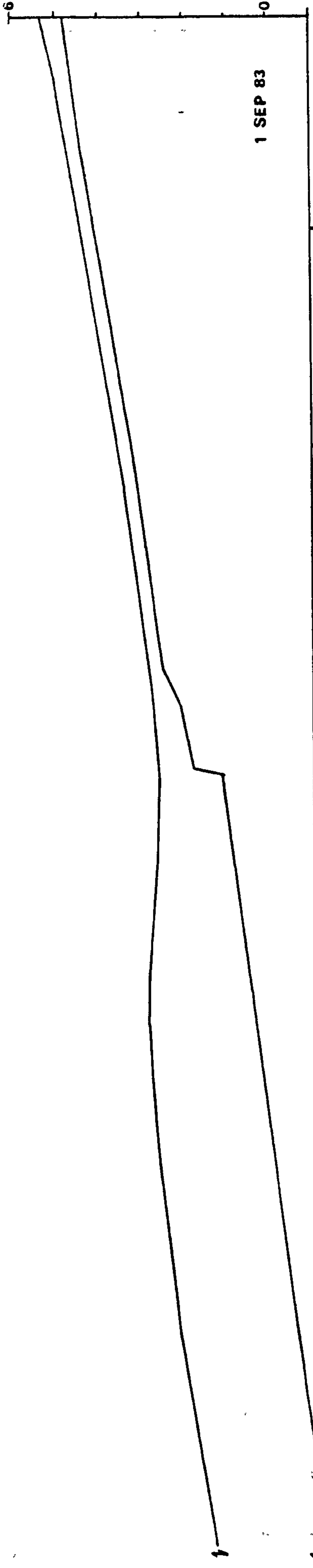
45

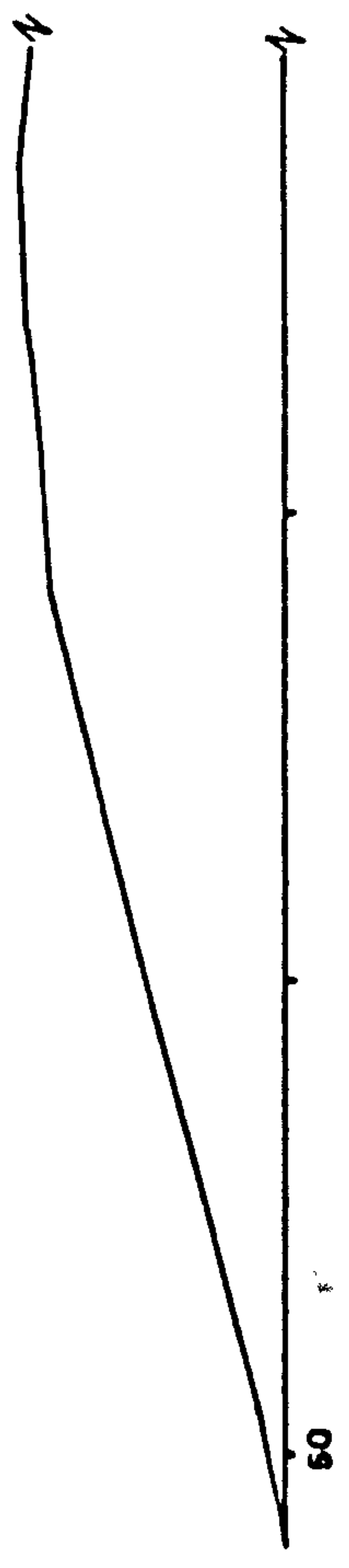
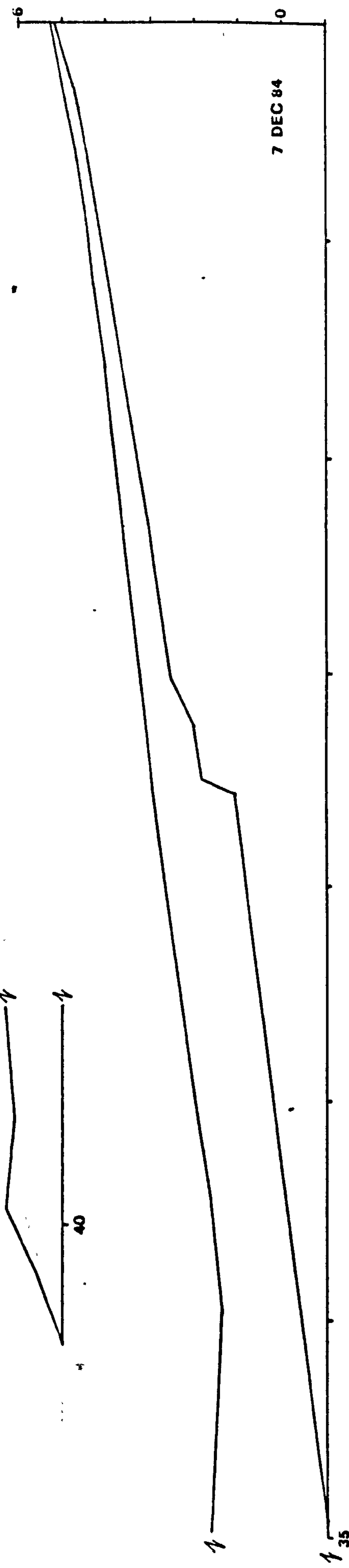


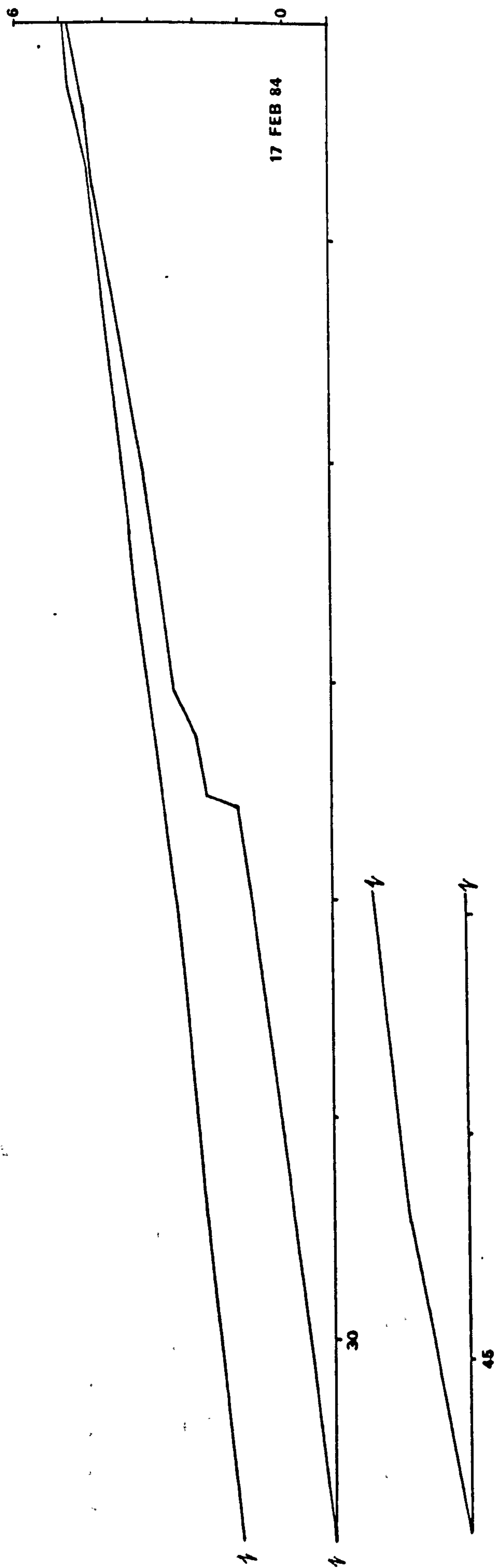
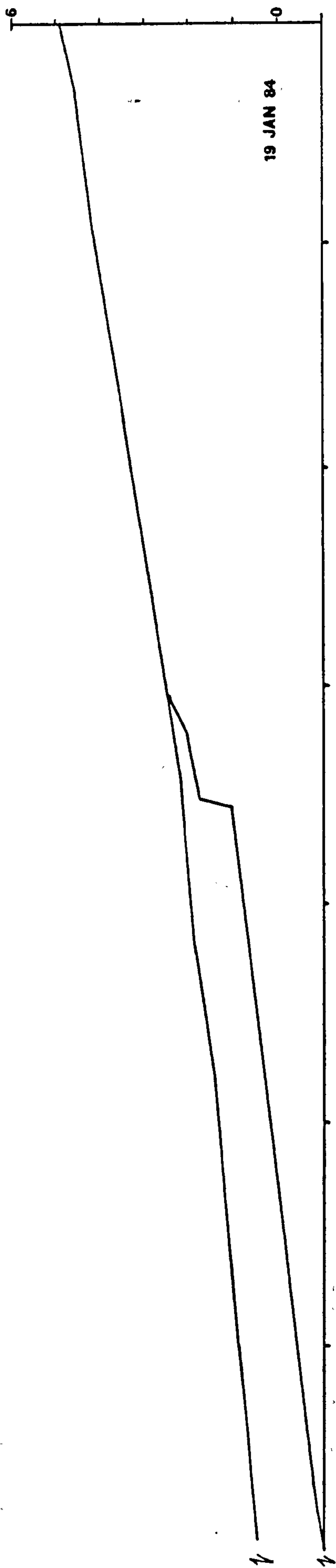
17 AUG 83

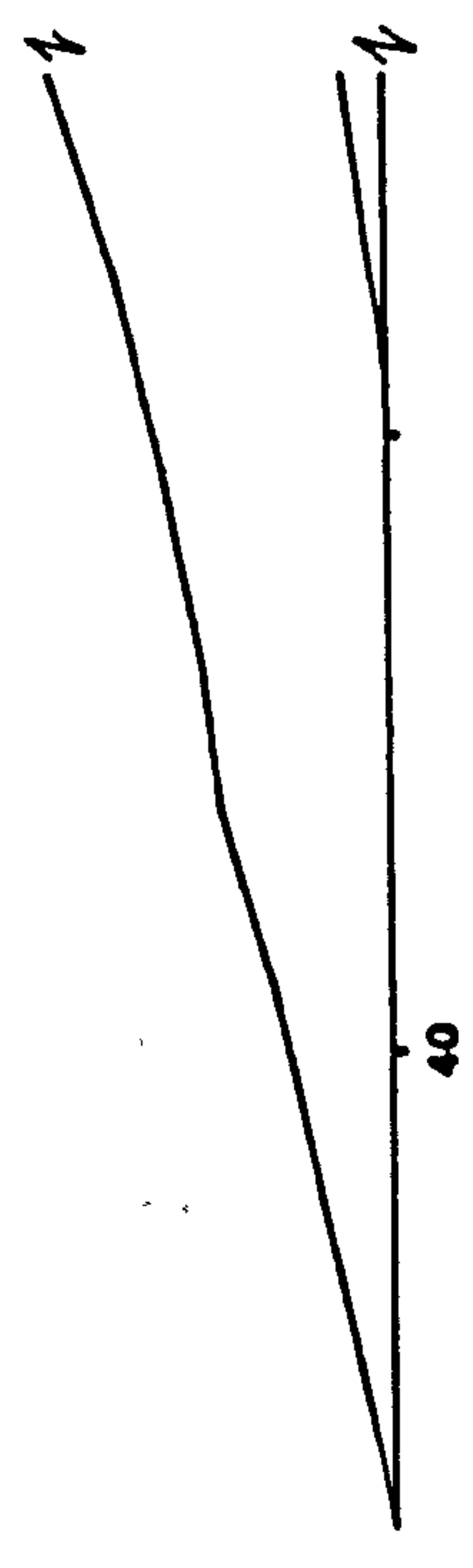
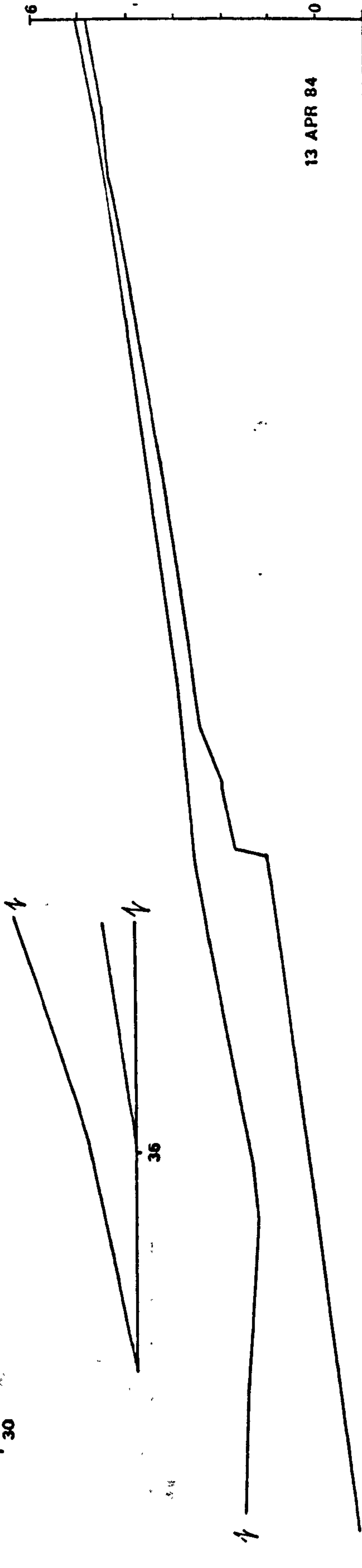
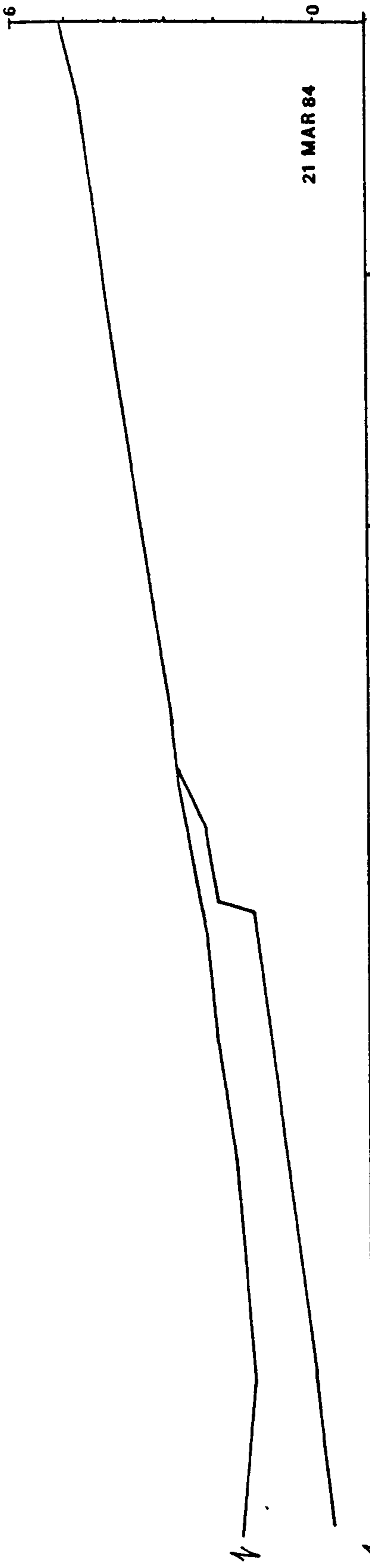
35



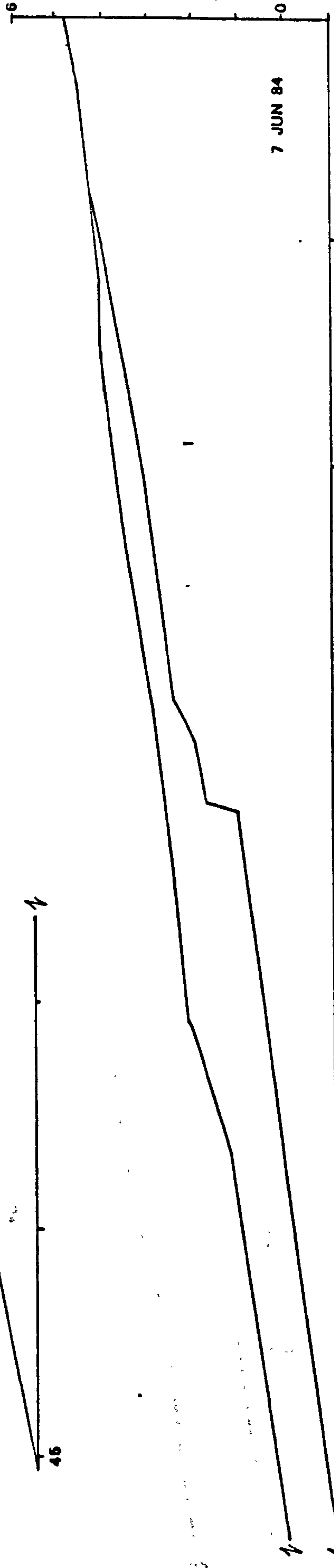
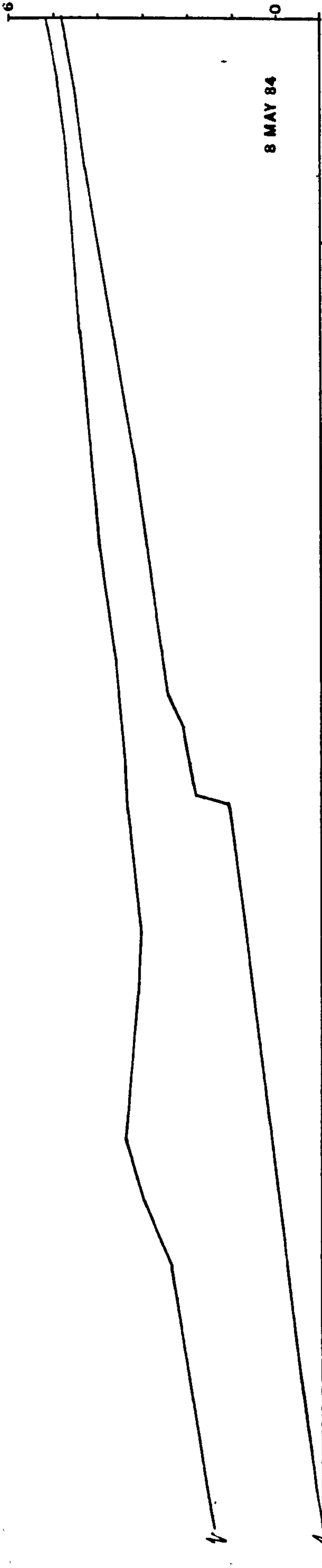


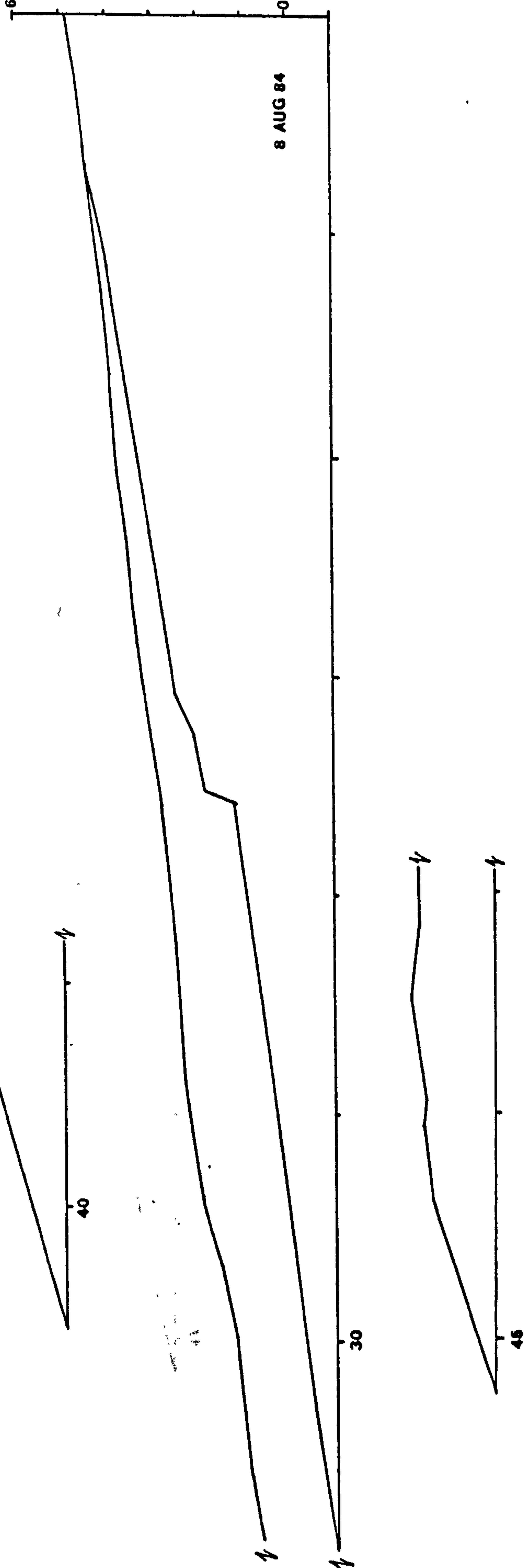
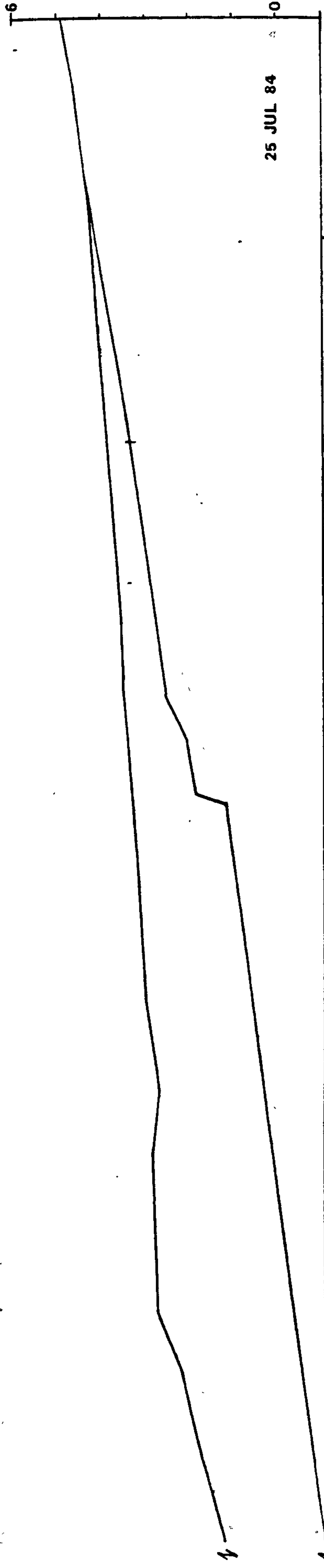


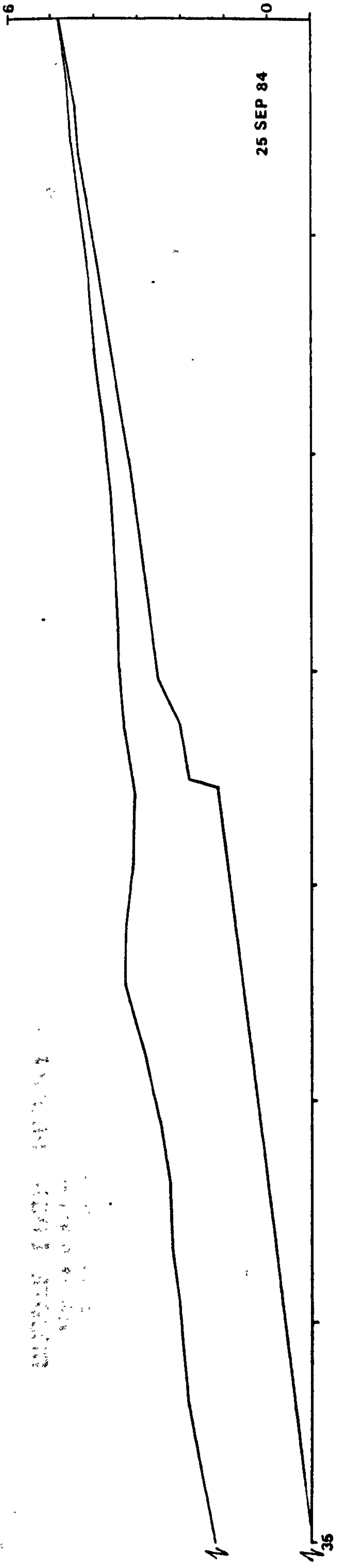




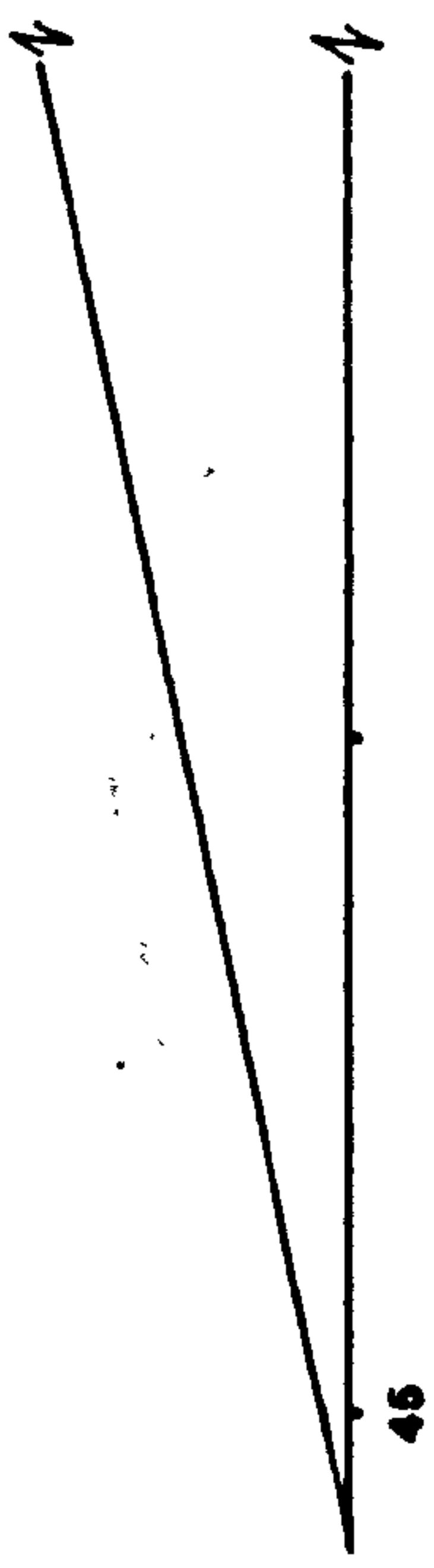








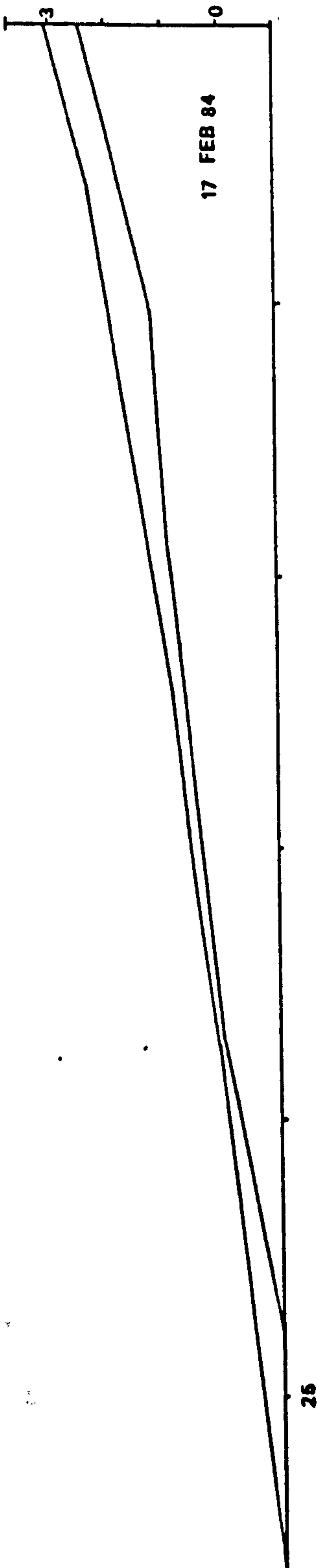
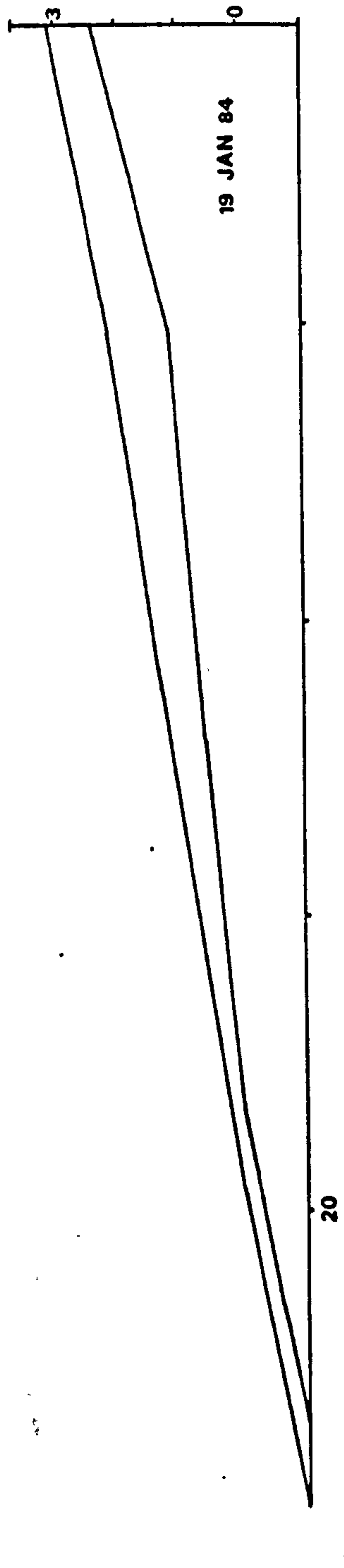
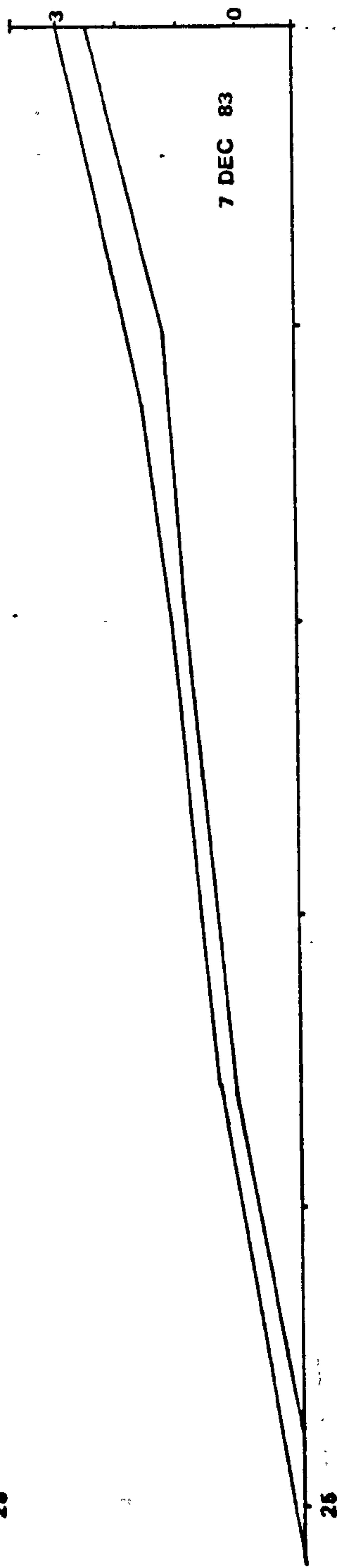
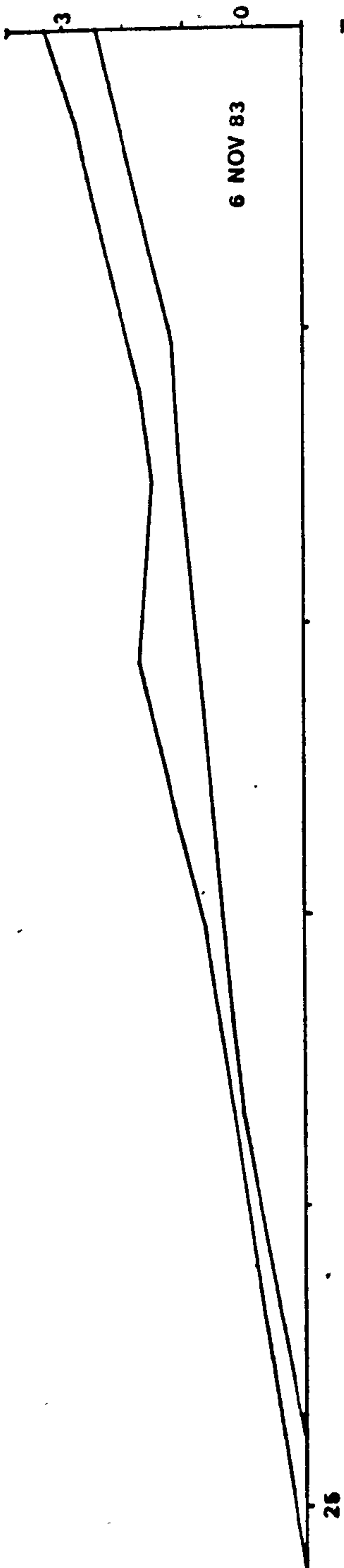
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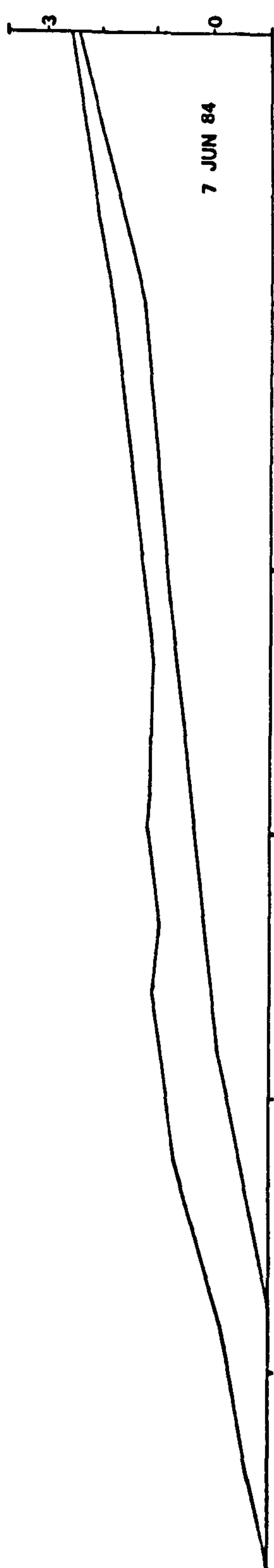
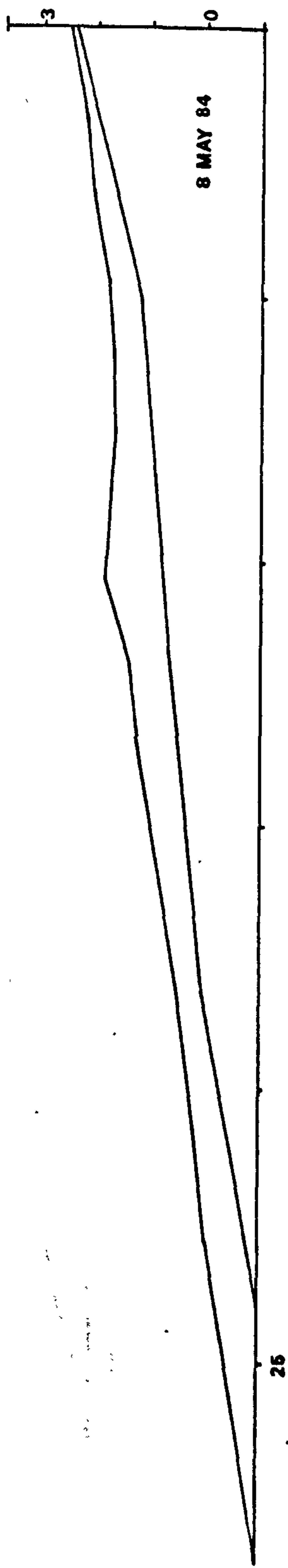


# DURDLE DOOR PROFILE 3

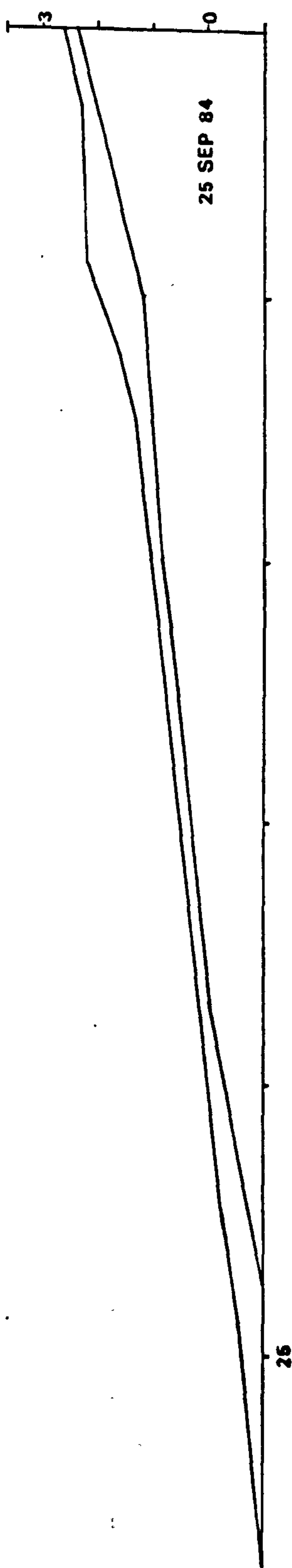
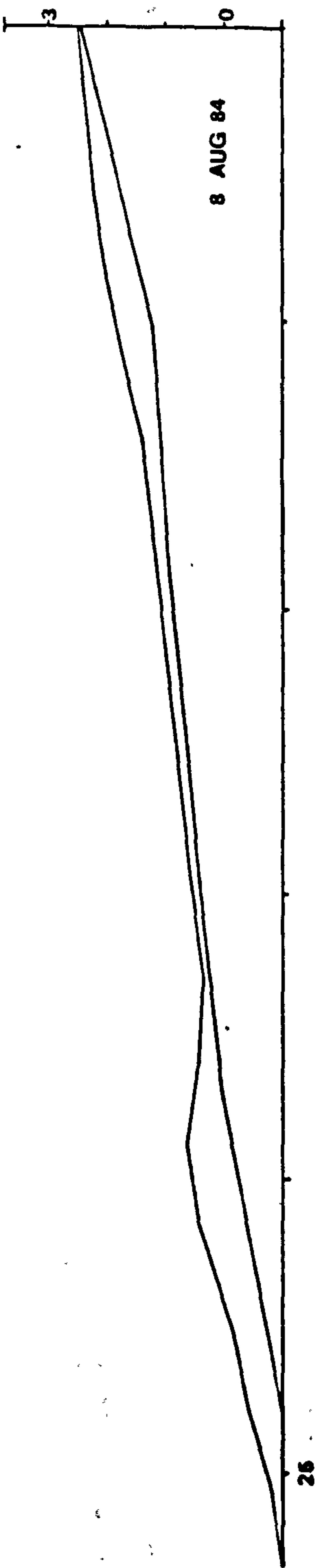
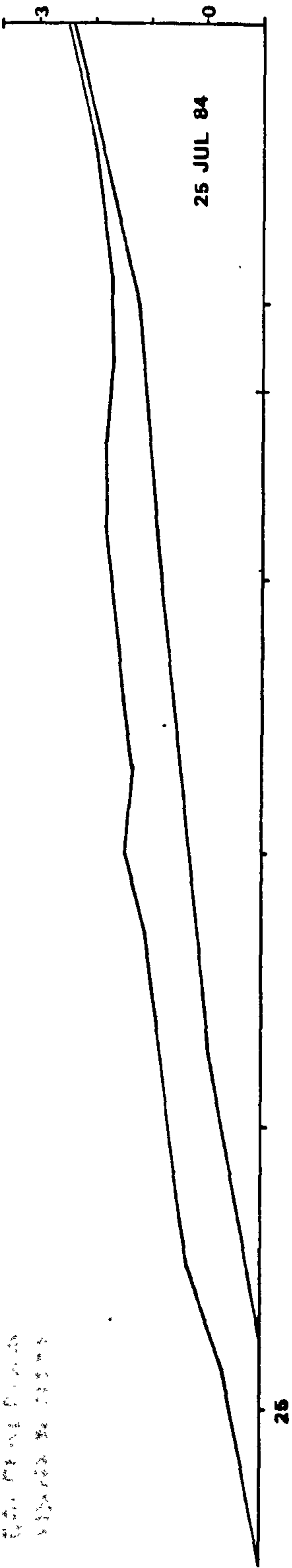
Figures in metres  
CD = Chert Datum





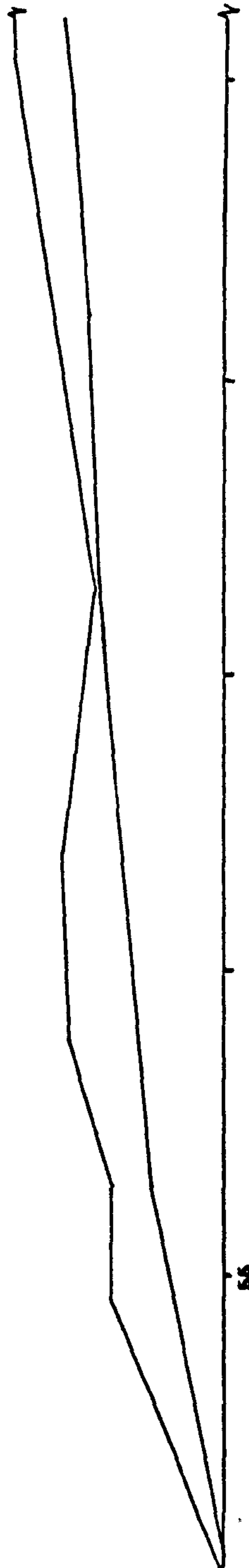
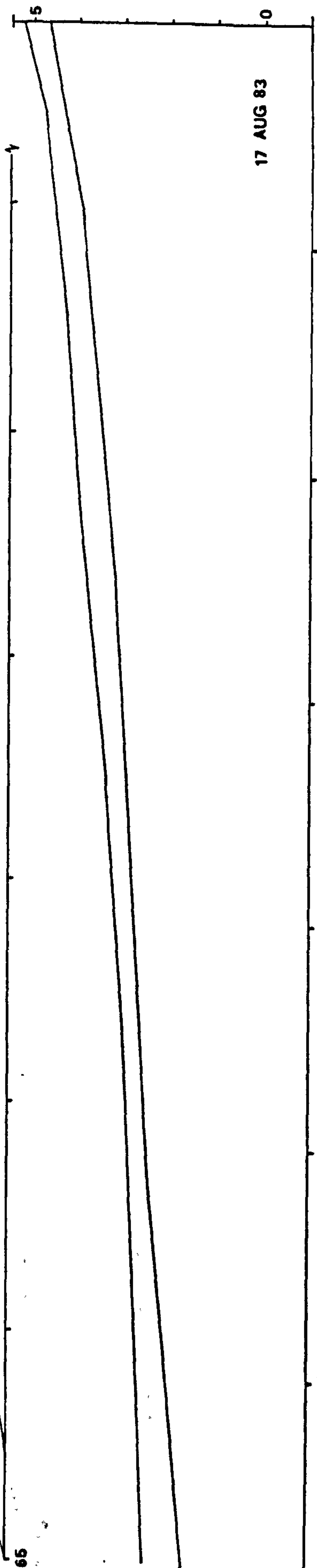
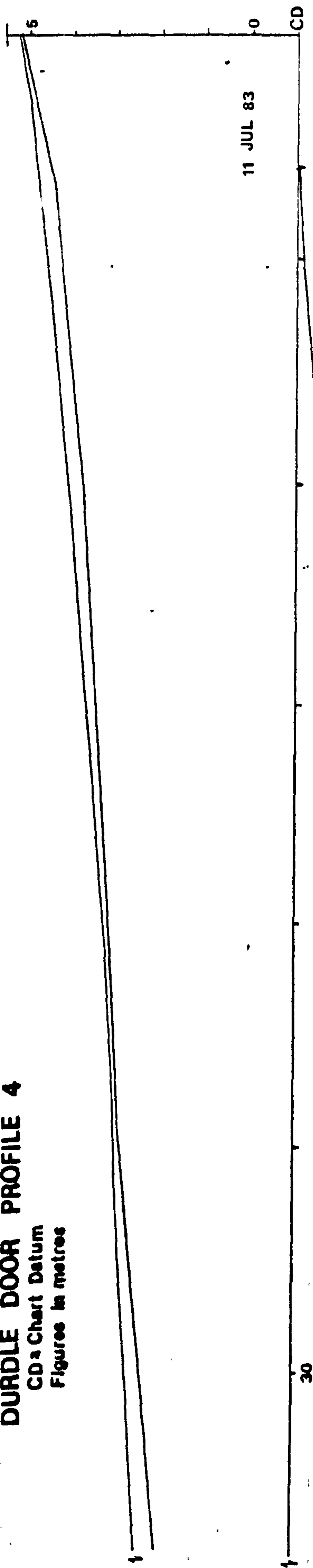


STATION NUMBER 10000000  
STATION NAME  
DATE 25 JUL 84

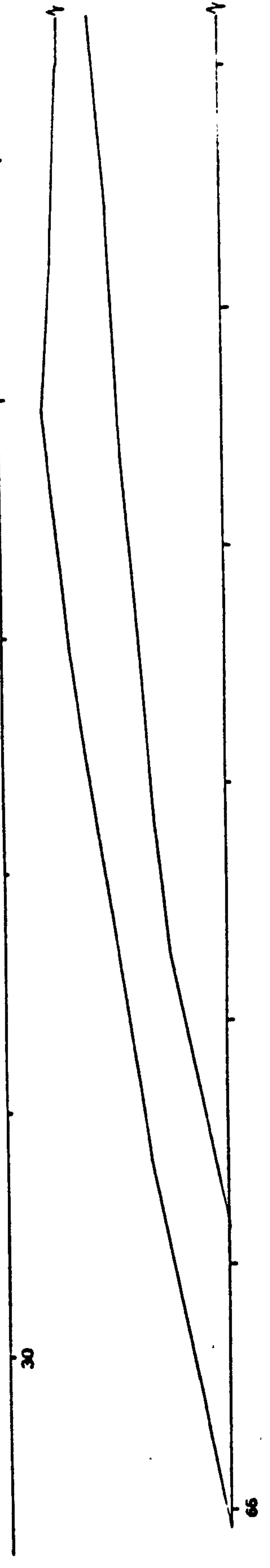
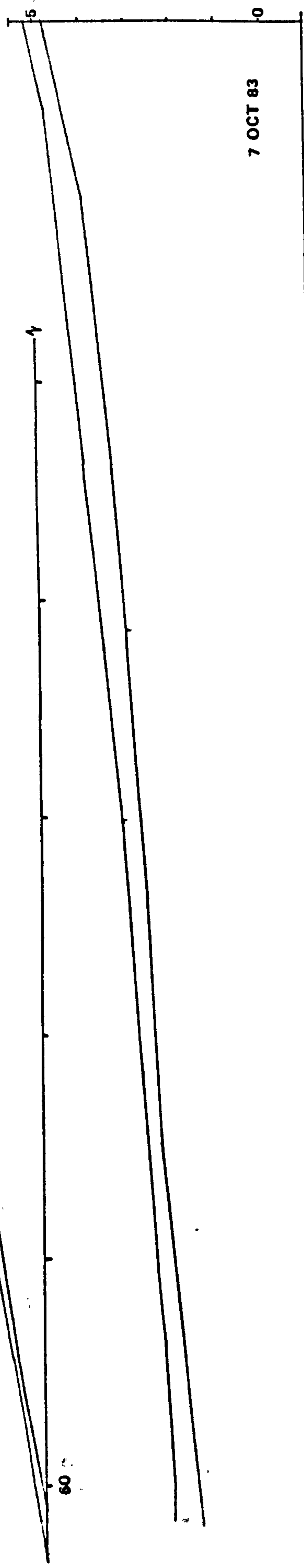
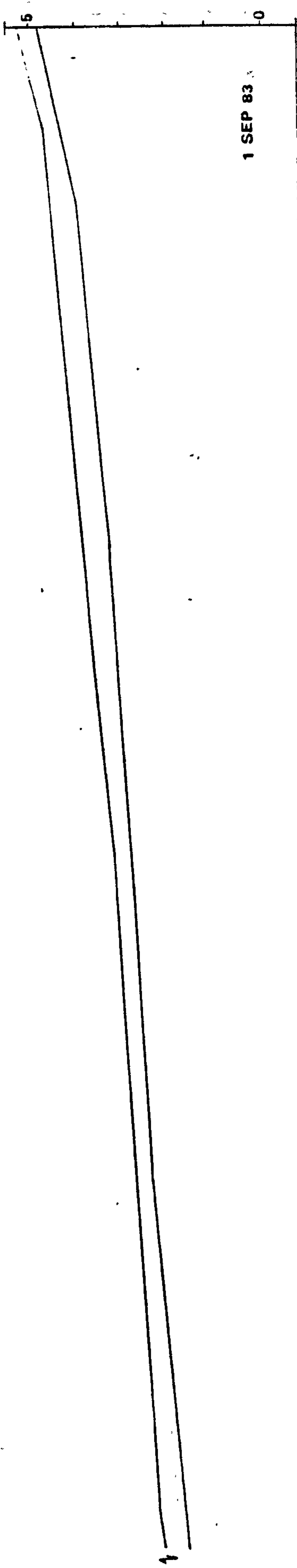


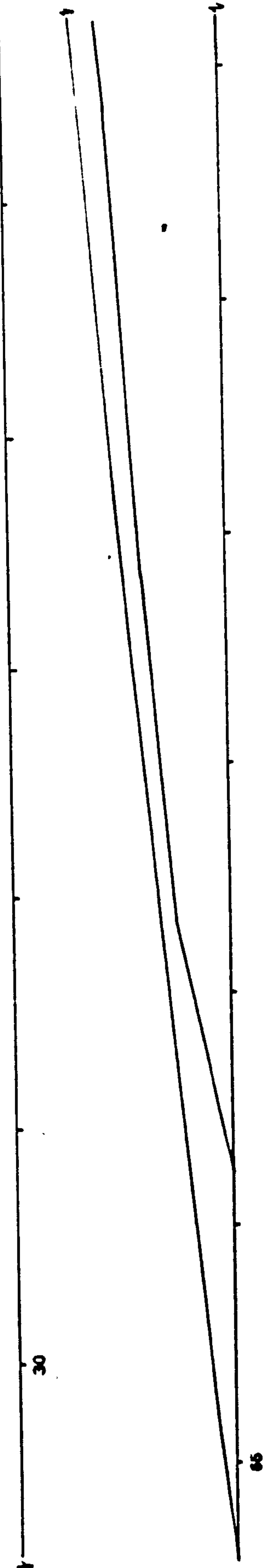
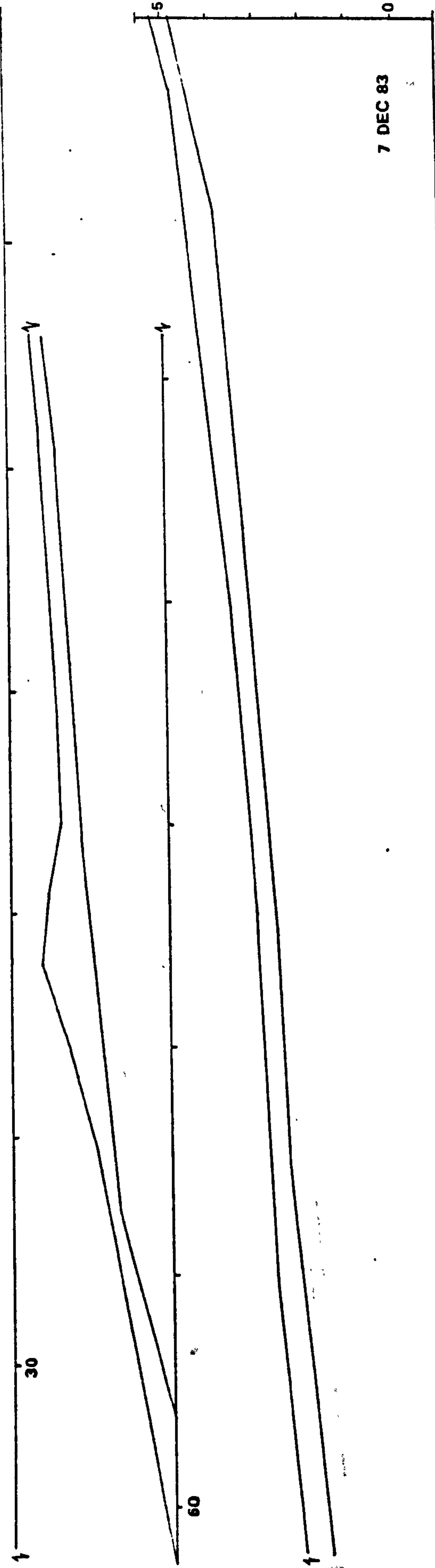
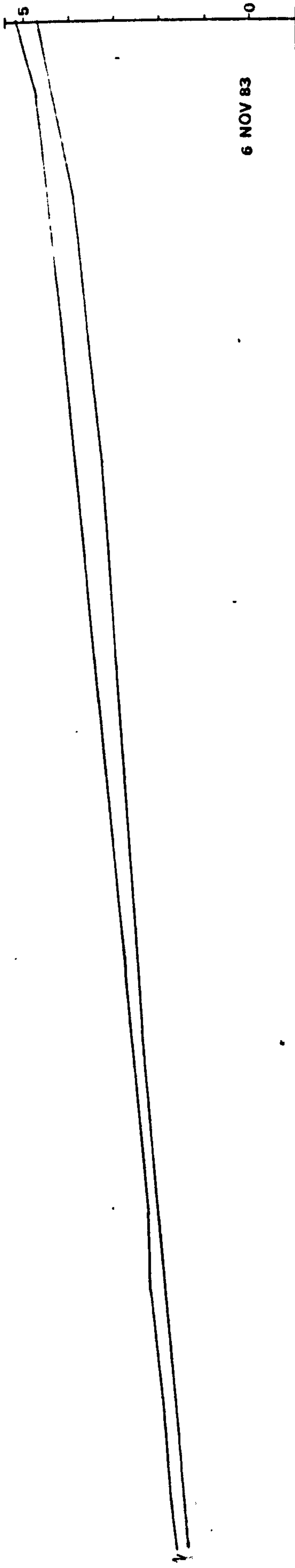
# DURDLE DOOR PROFILE 4

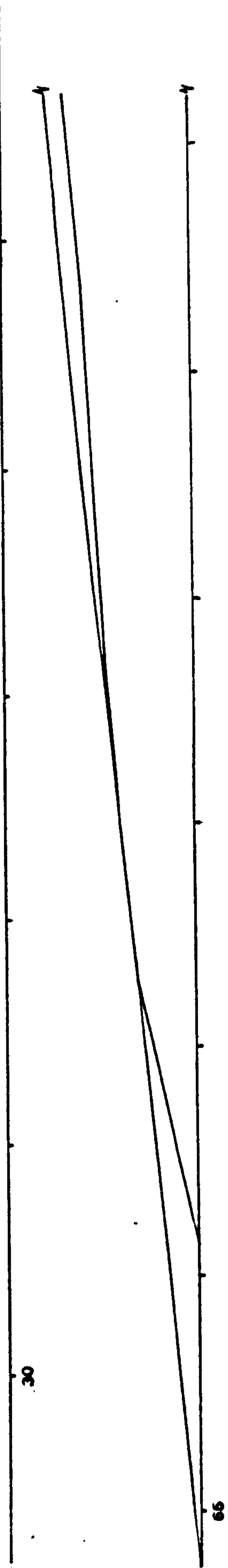
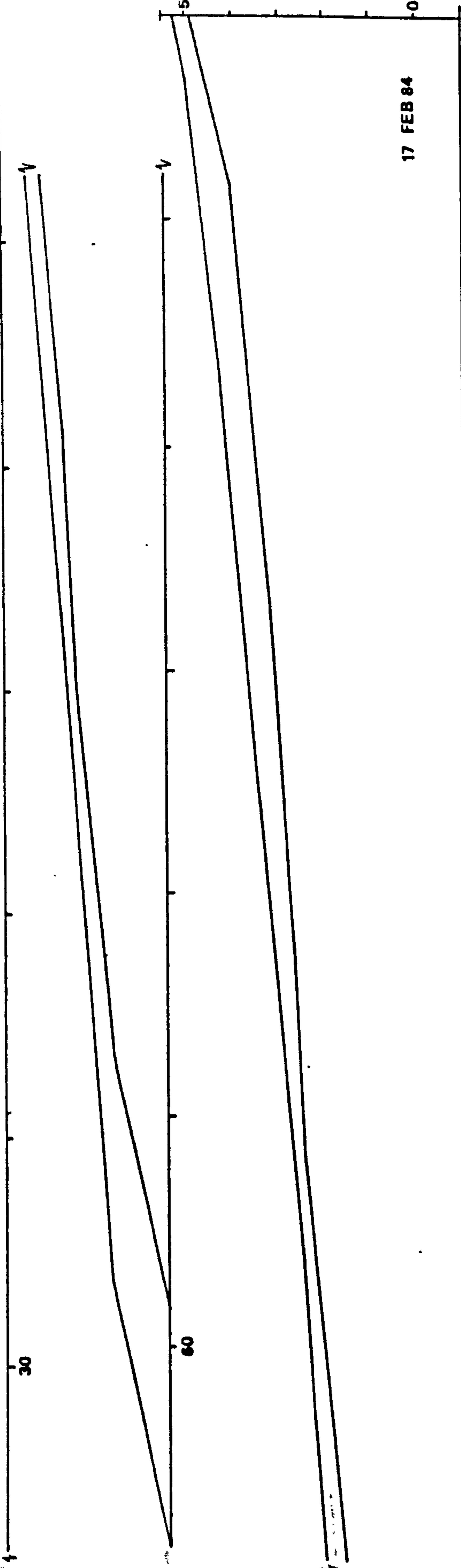
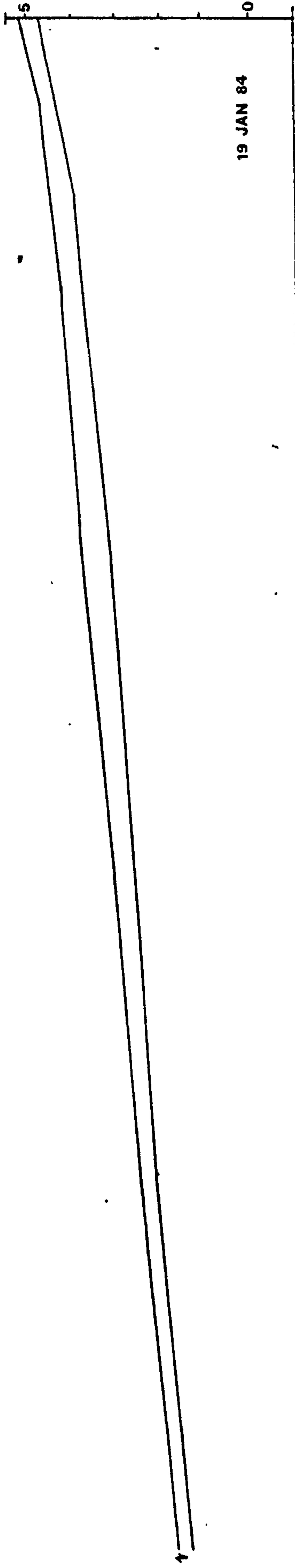
CD = Chart Datum  
Figures in metres

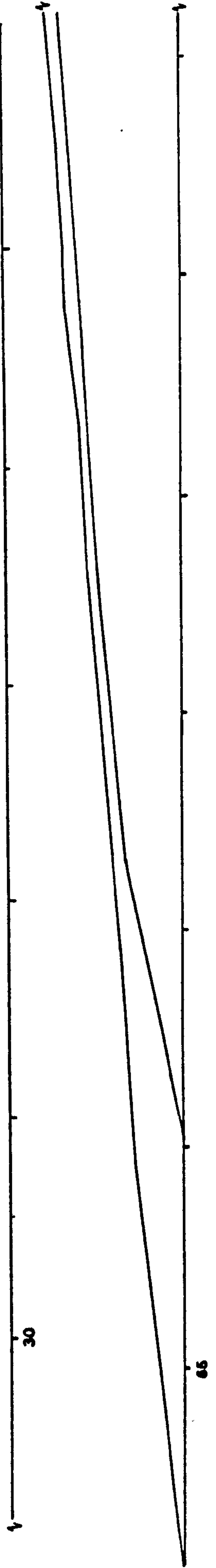
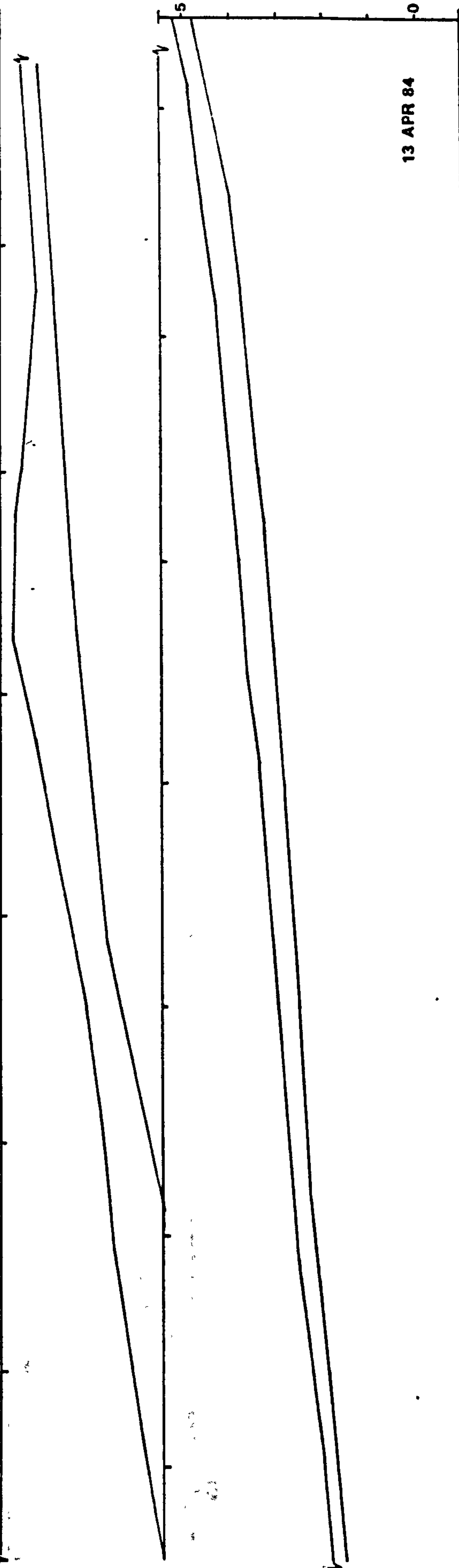
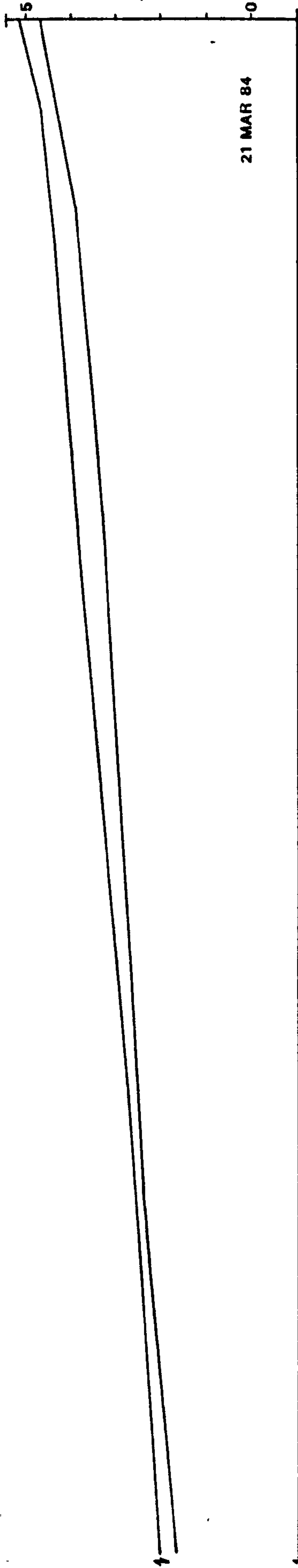


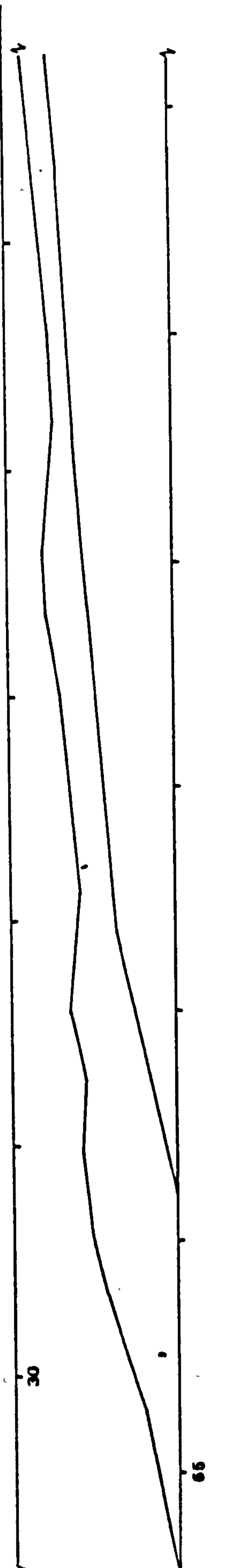
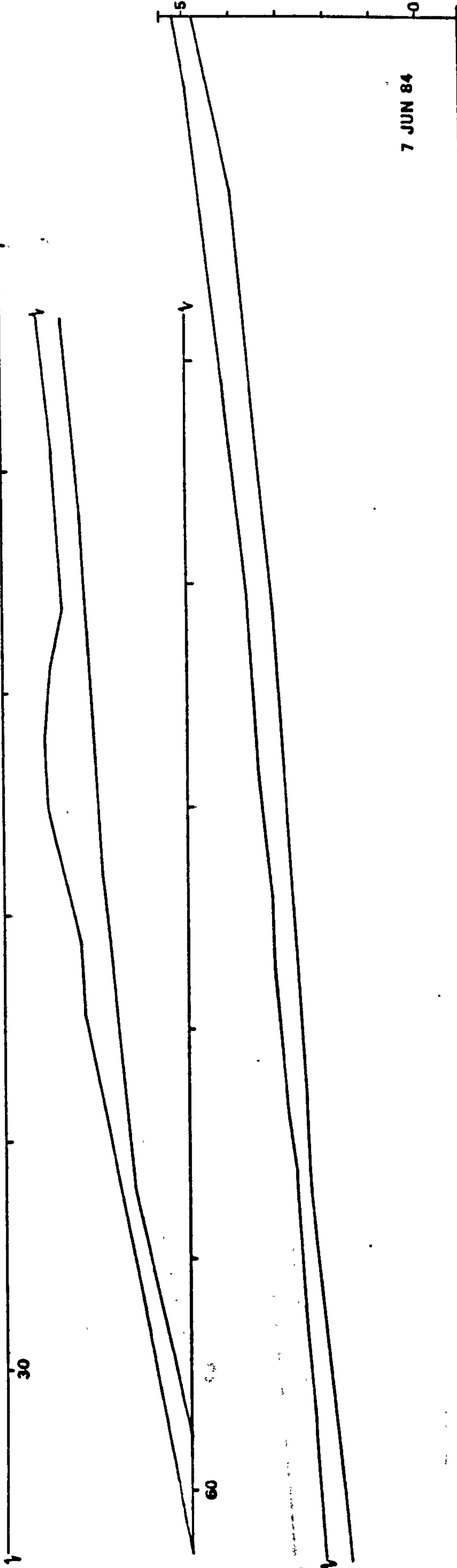
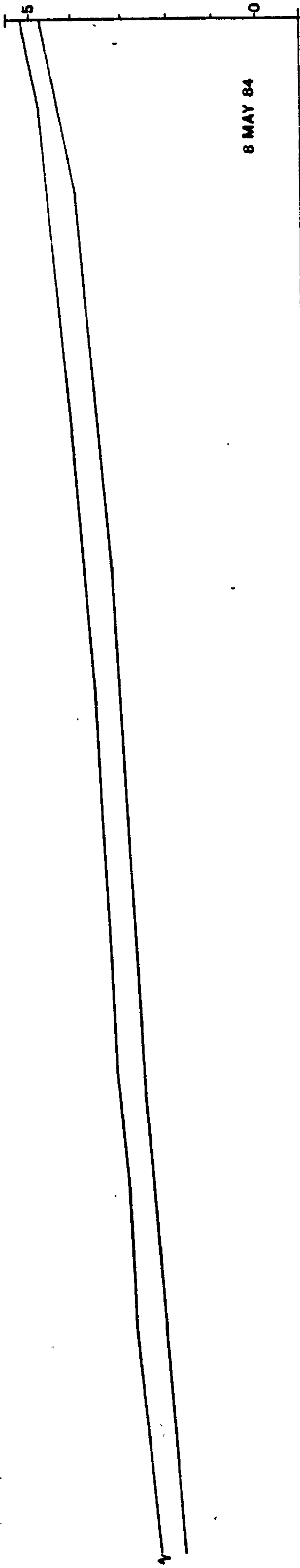


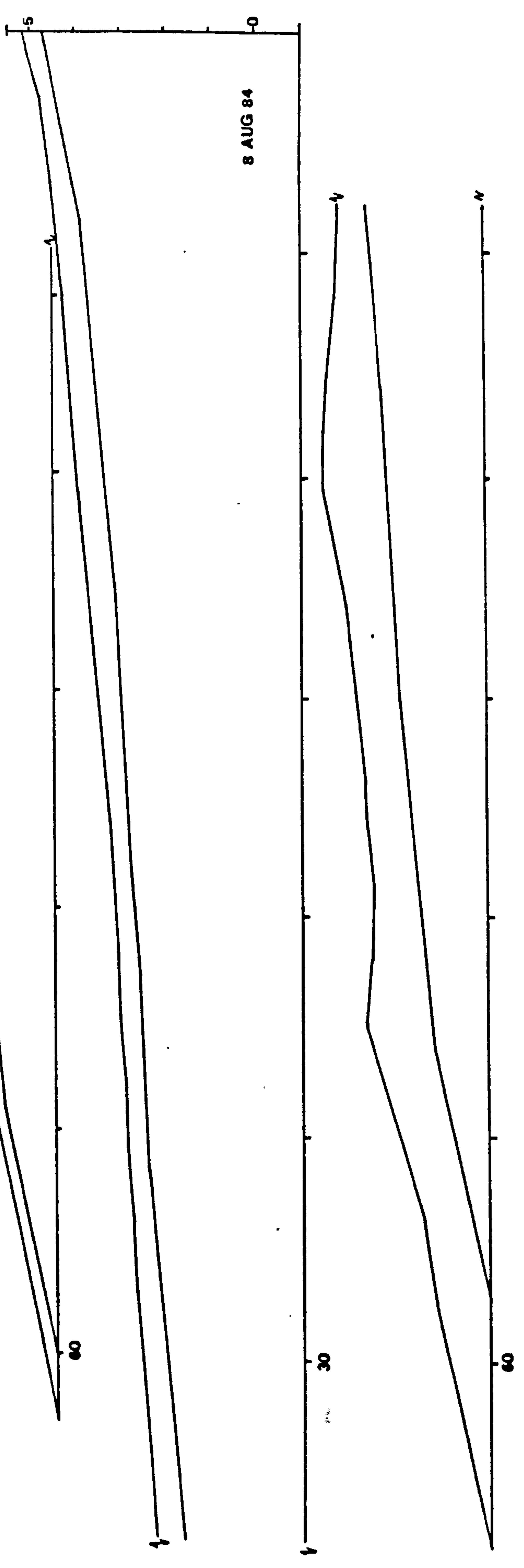
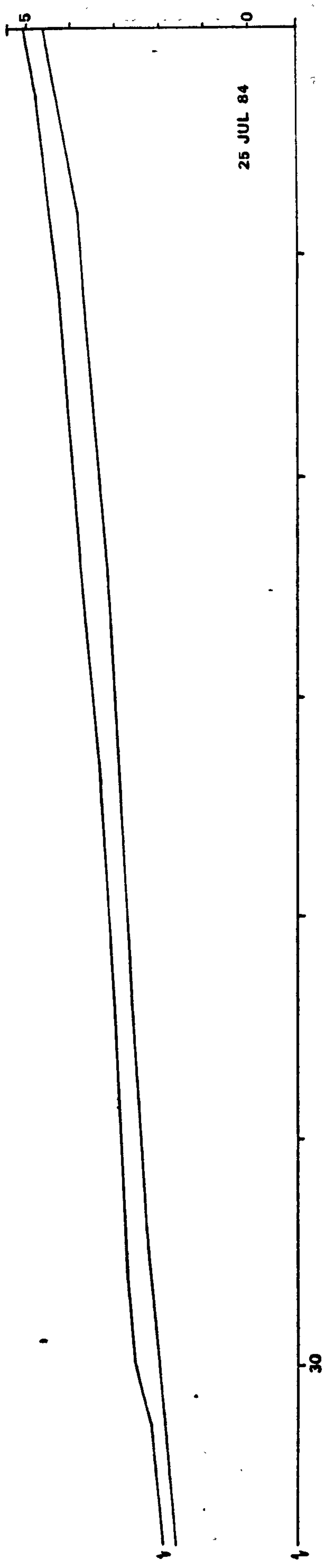




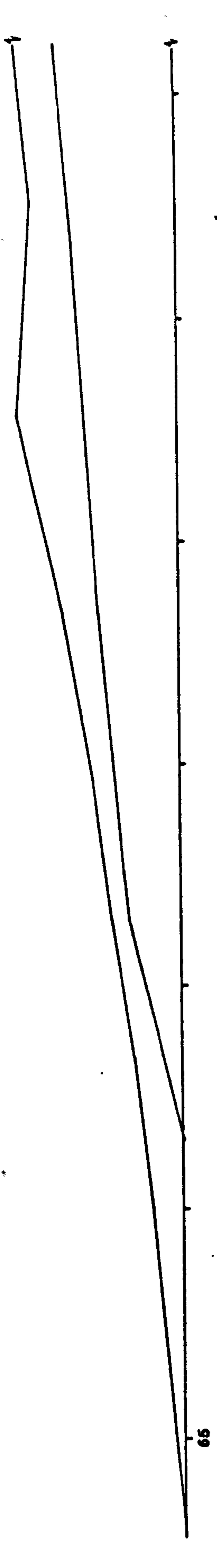
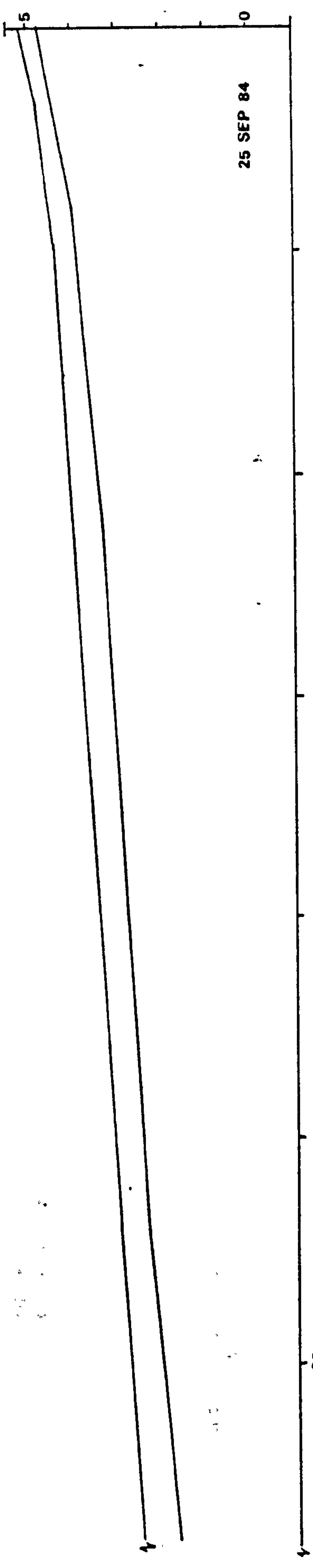






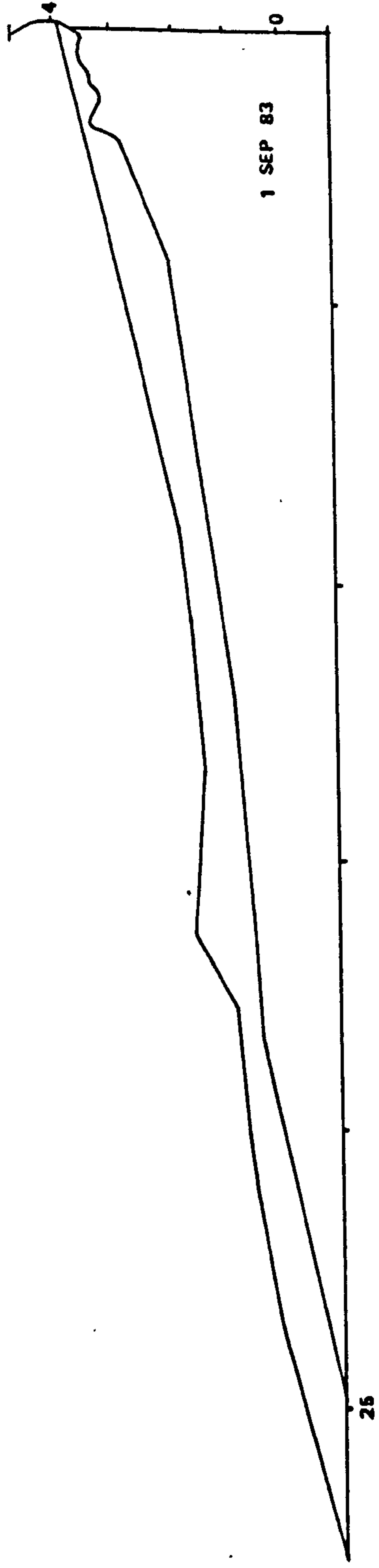
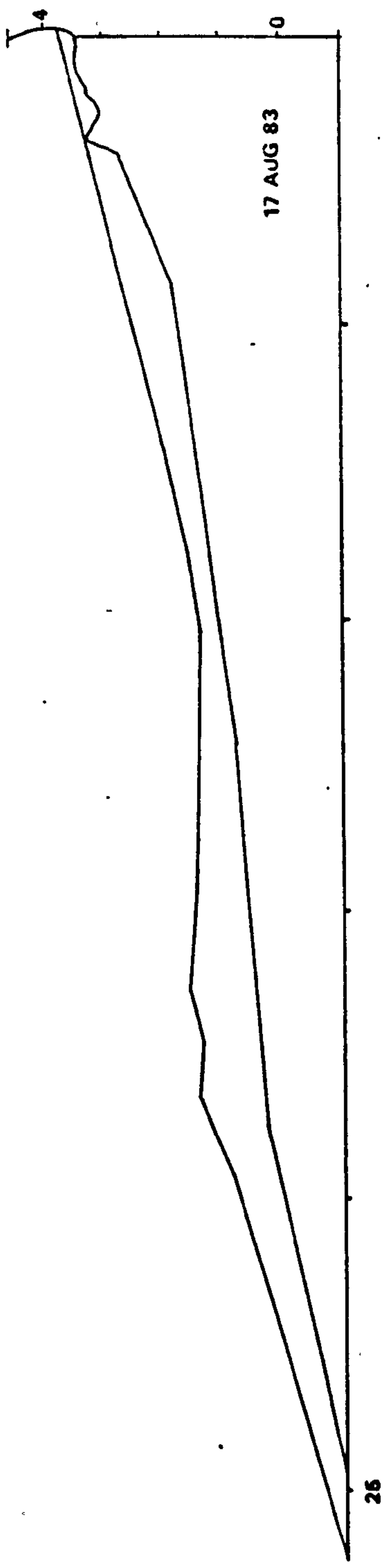
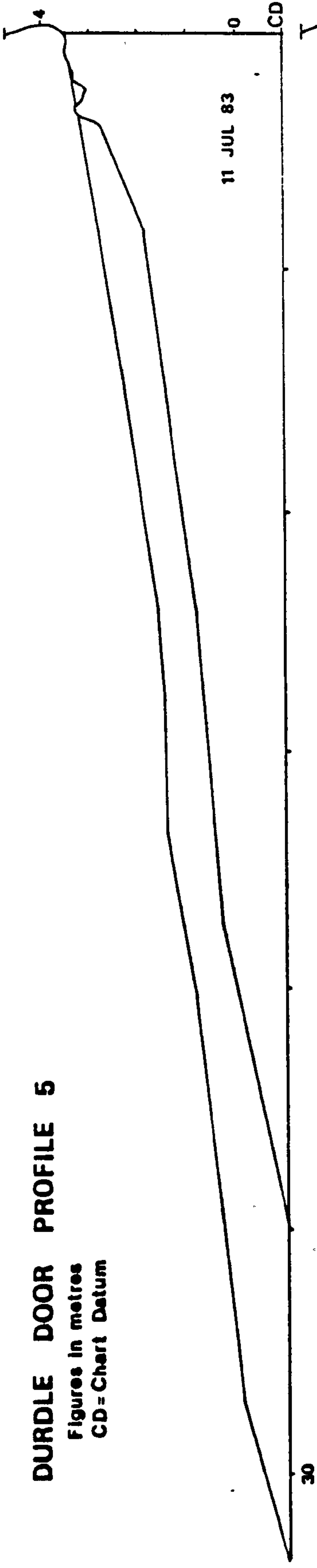


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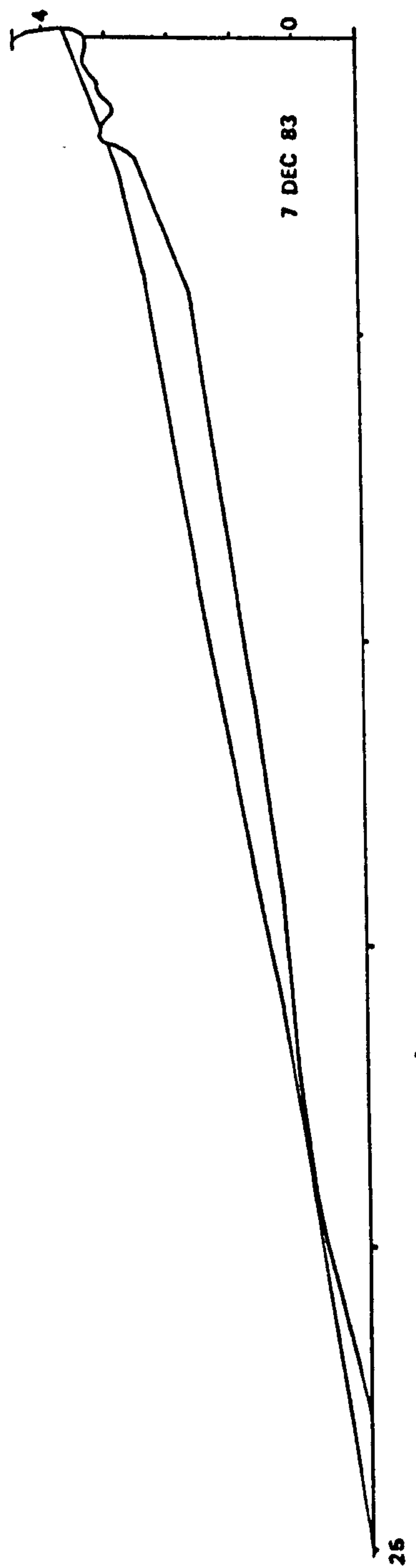
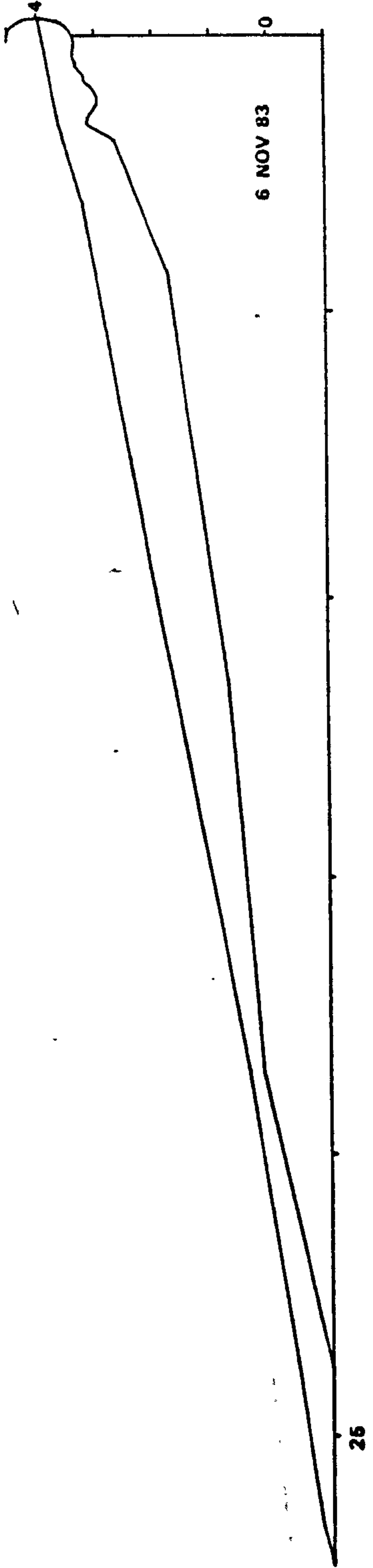
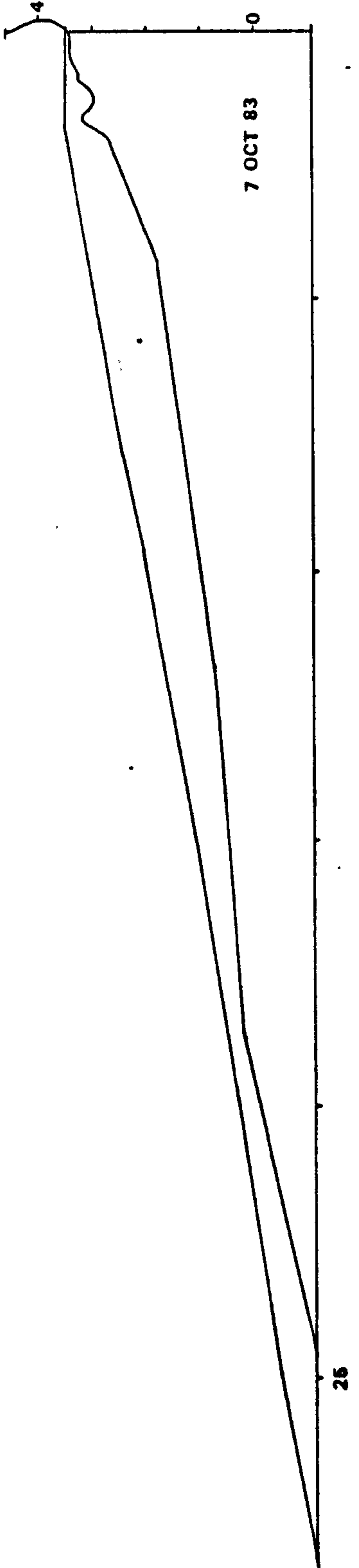


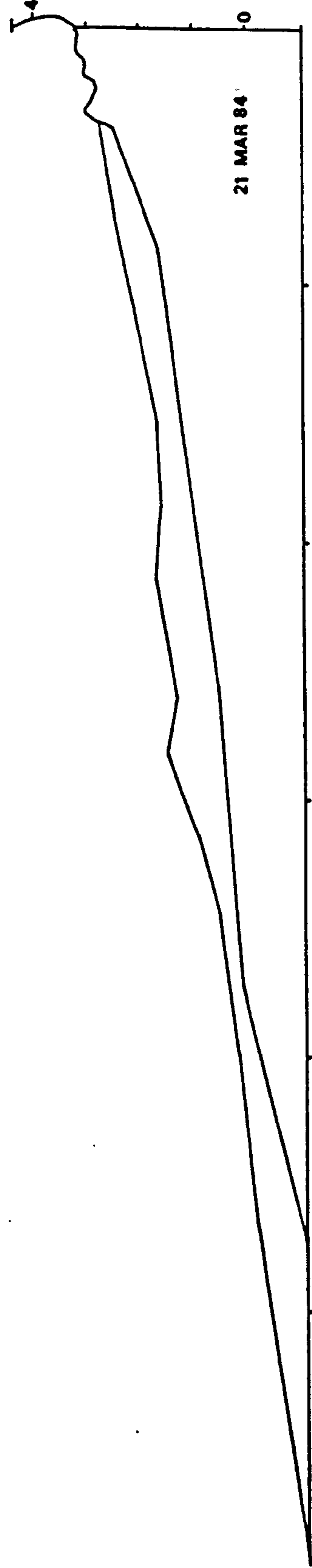
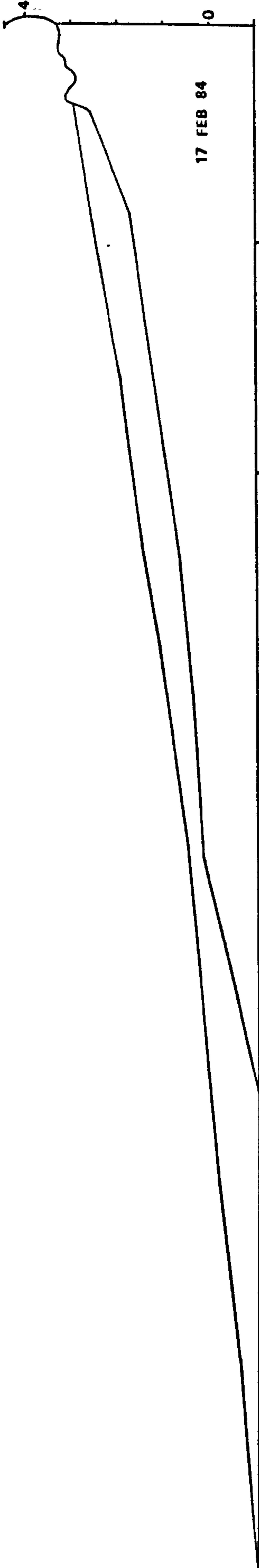
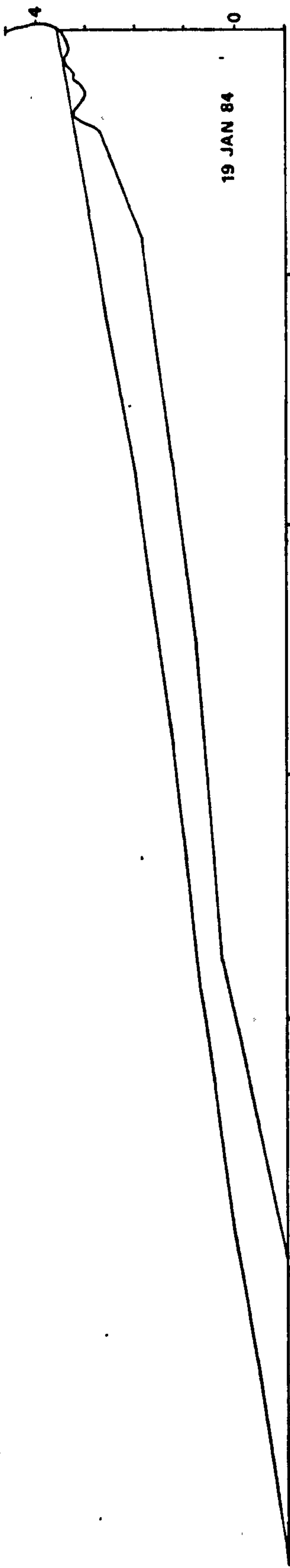
# DURDLE DOOR PROFILE 5

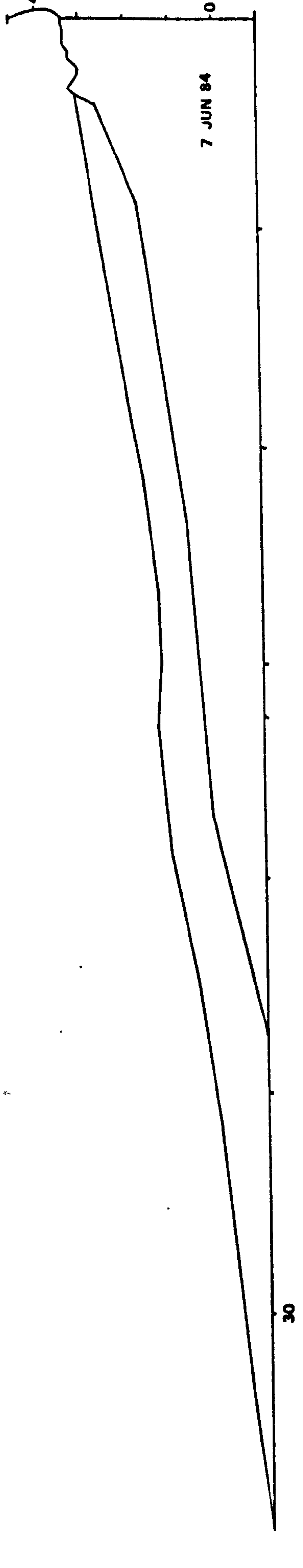
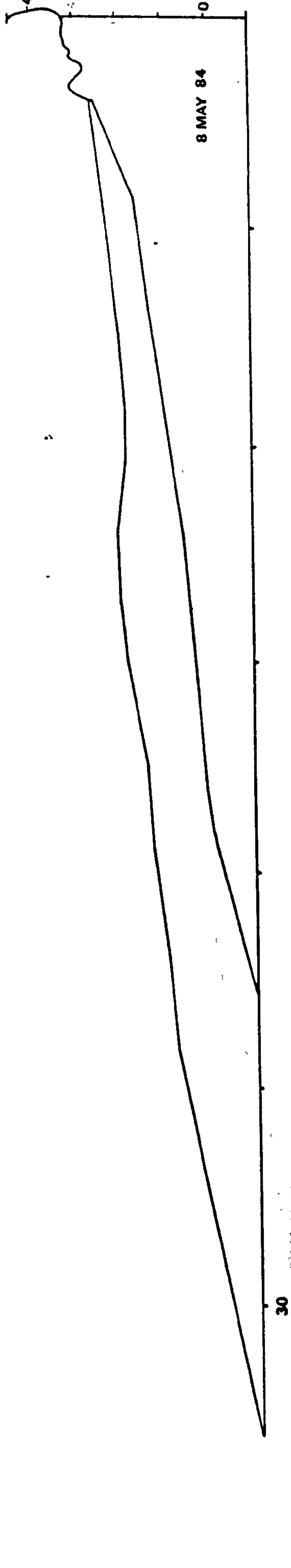
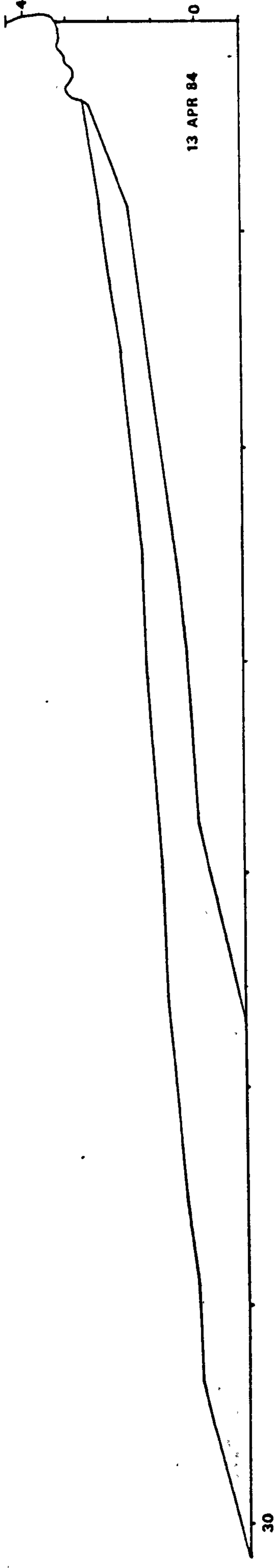
Figures in metres  
CD = Chart Datum



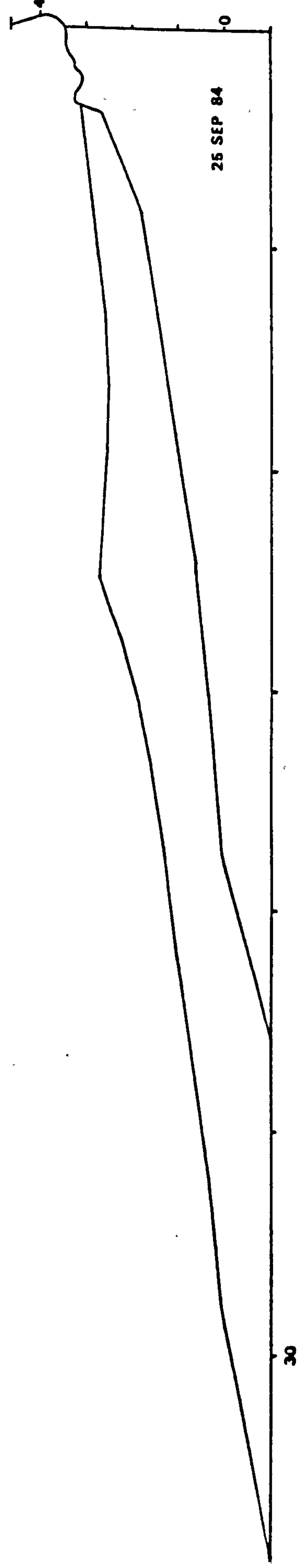
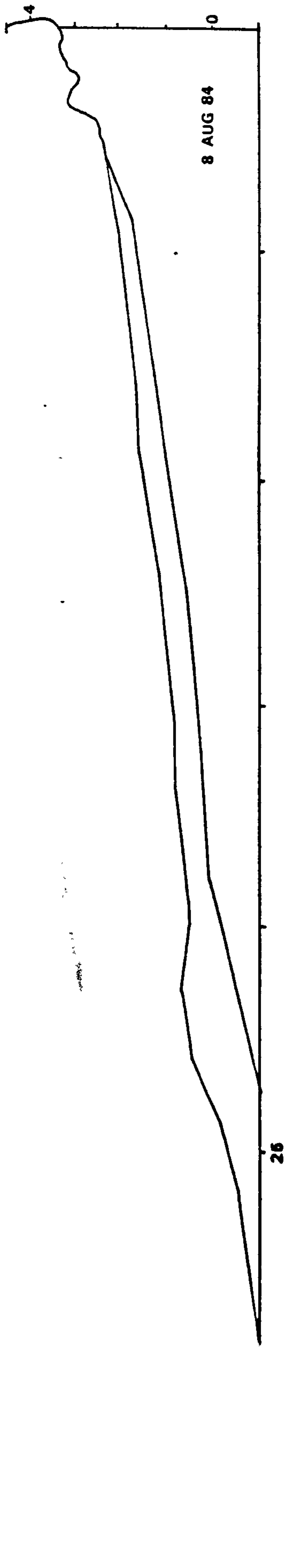
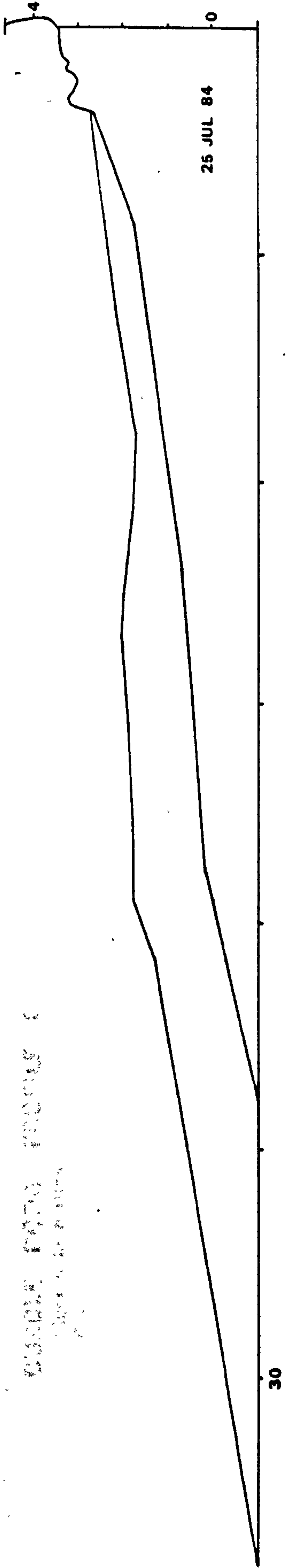






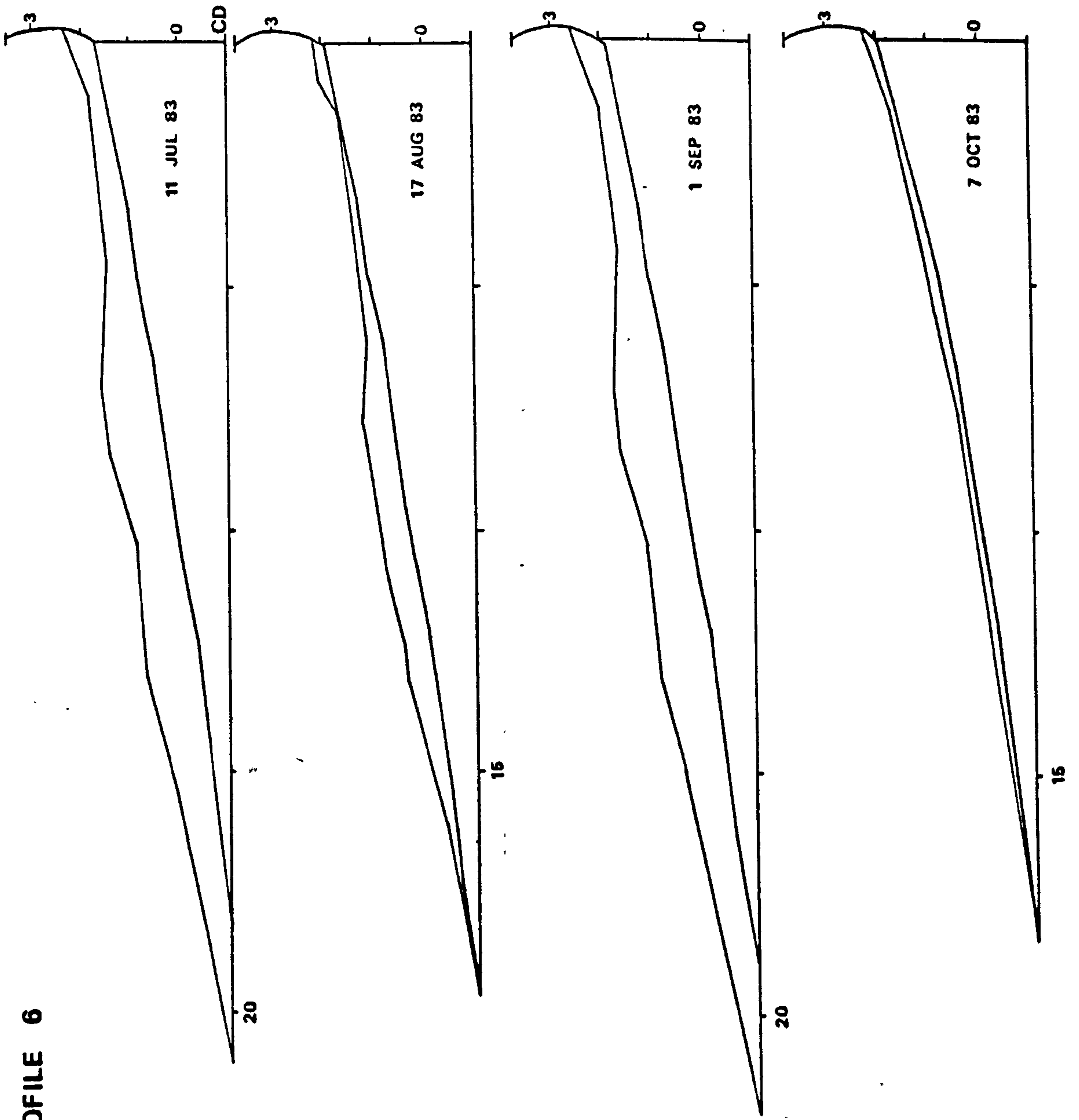


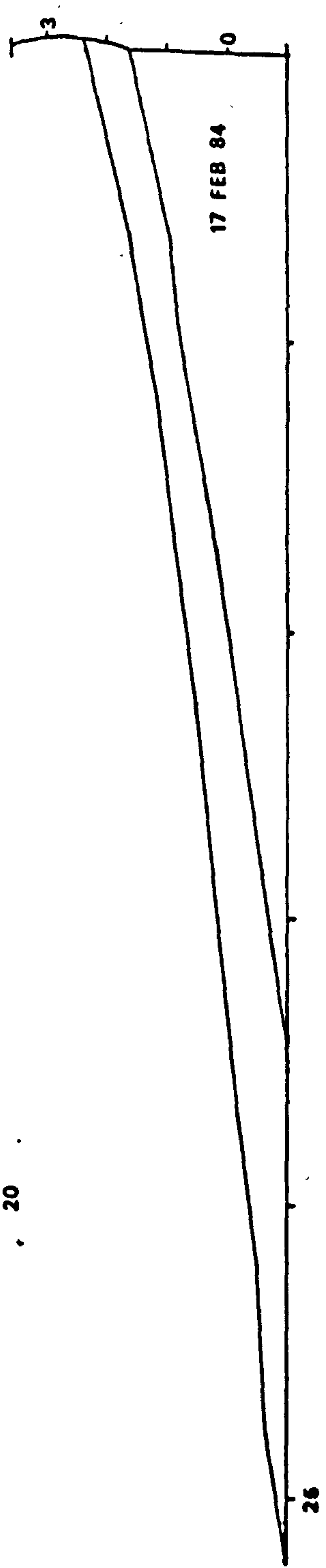
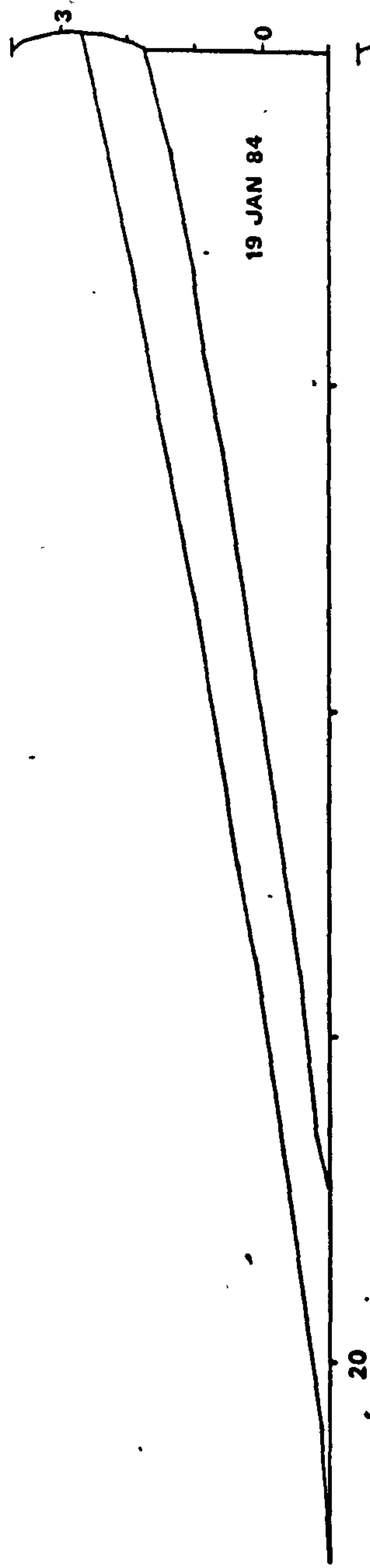
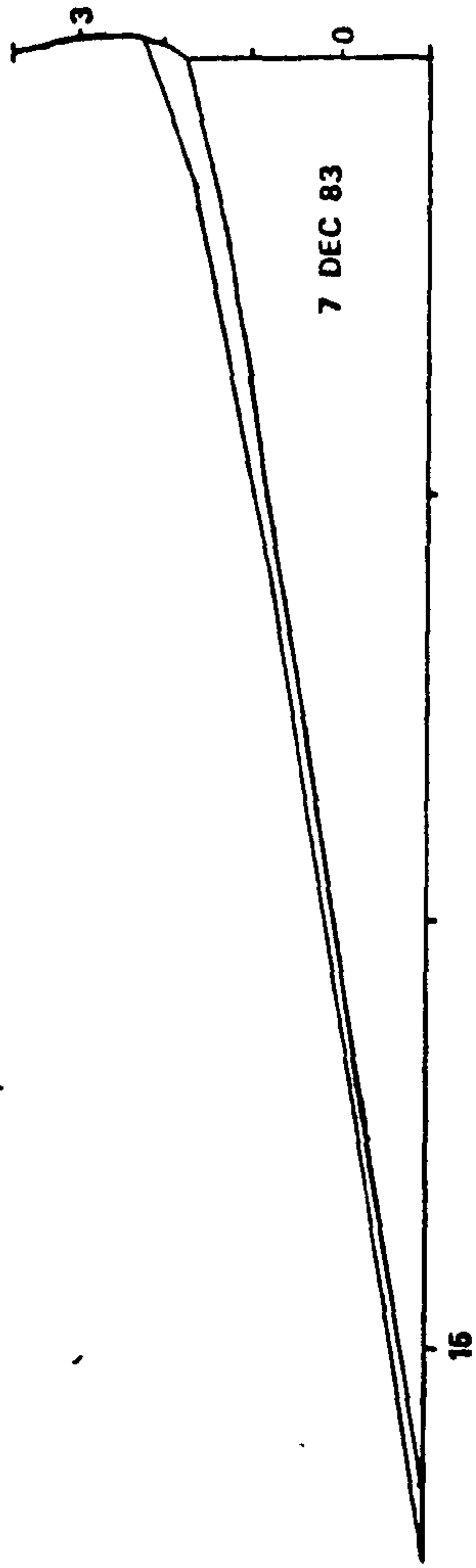
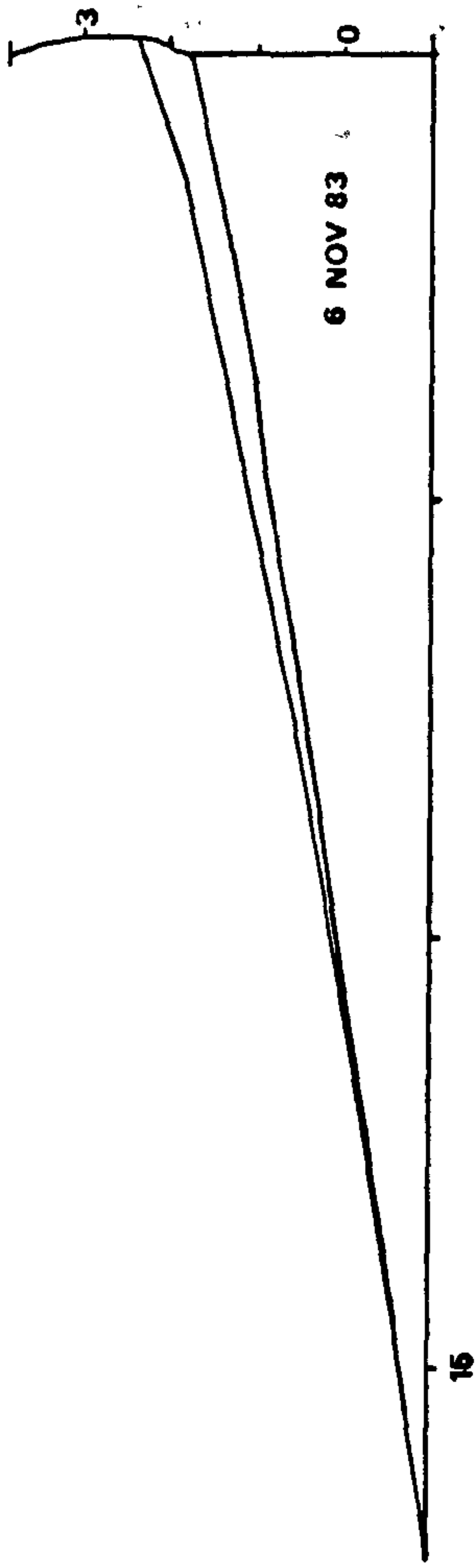
WINDSPEED DATA - 1000 FT  
1000 FT WINDSPEED



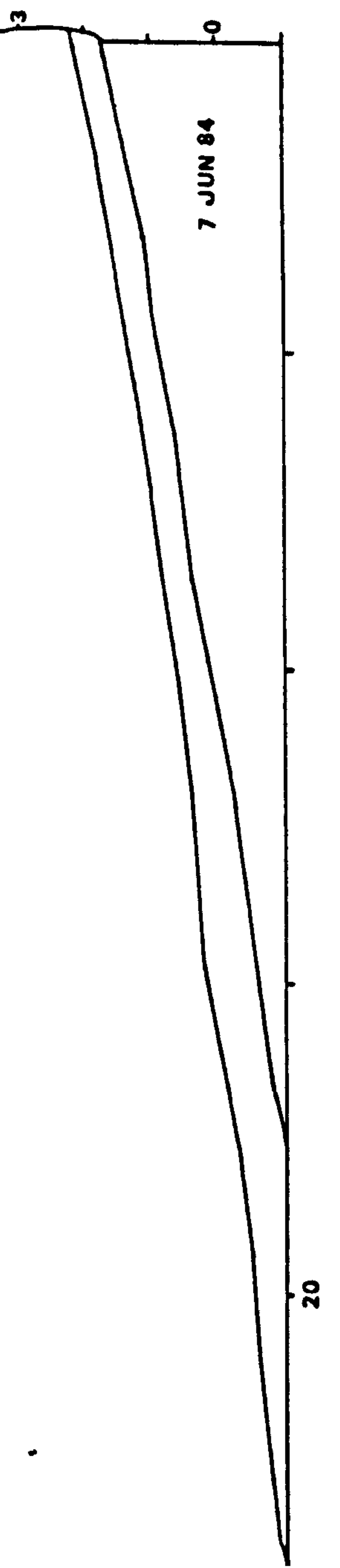
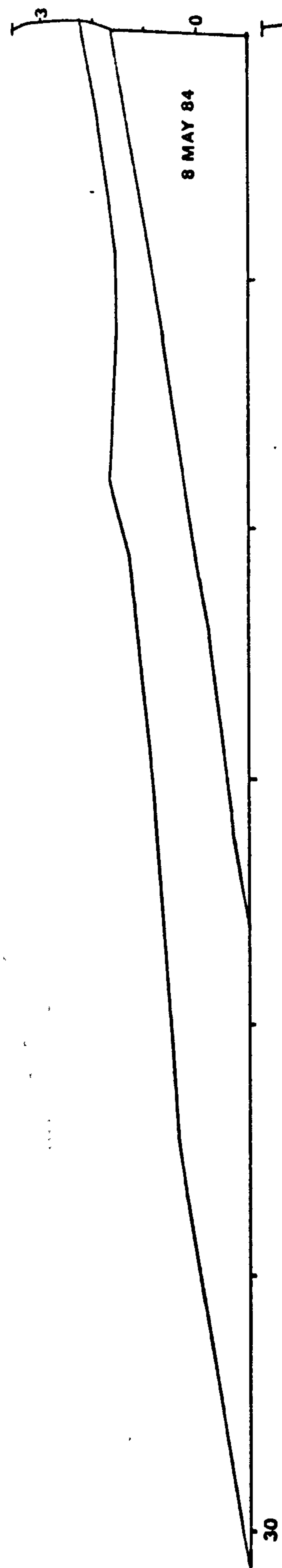
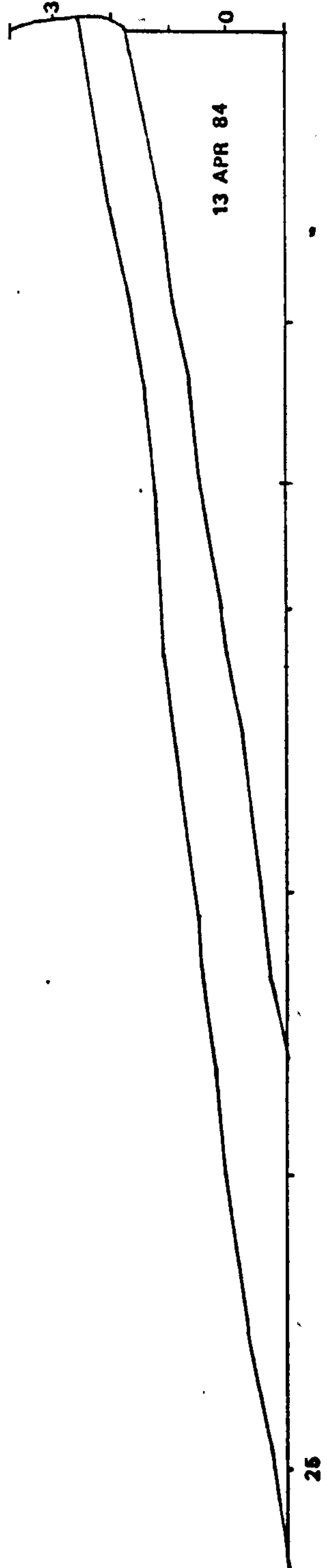
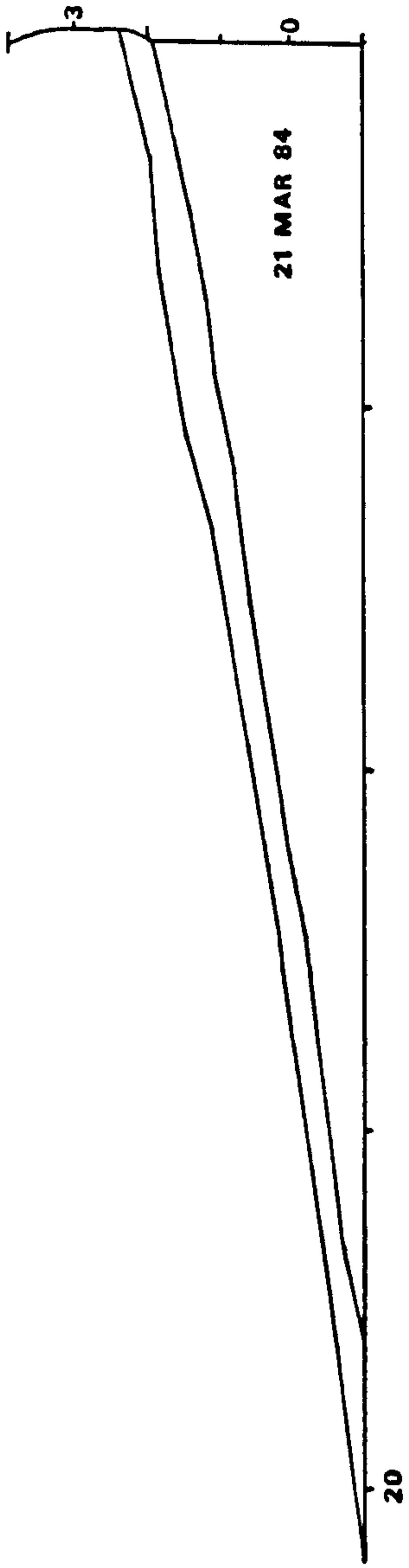
# DURDLE DOOR PROFILE 6

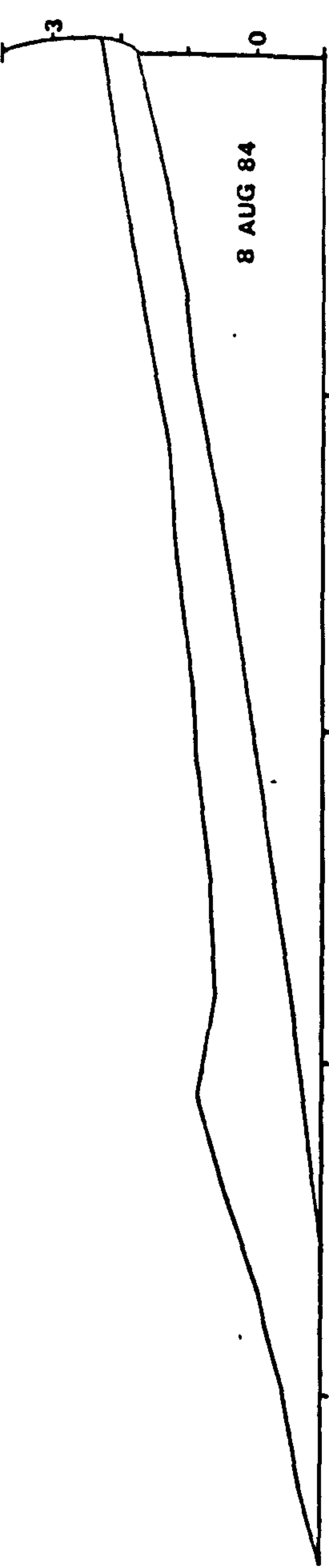
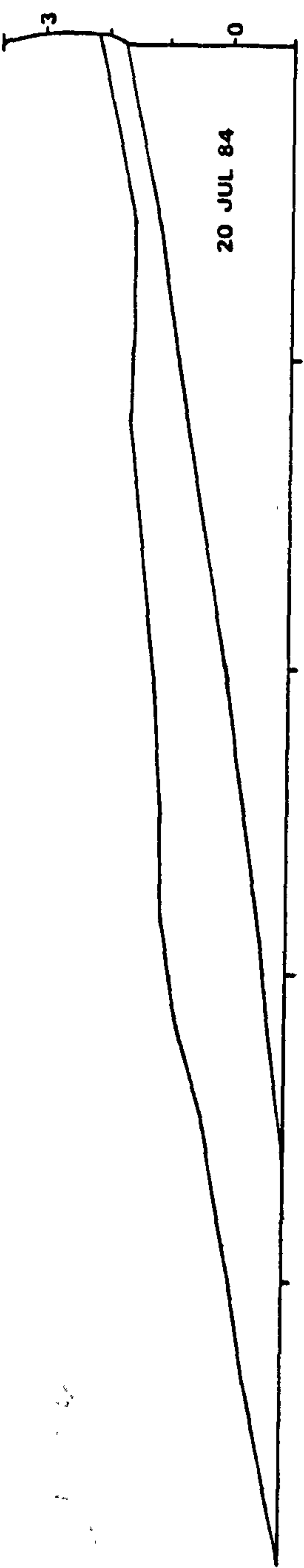
Figures in metres  
CD=Chart Datum





25

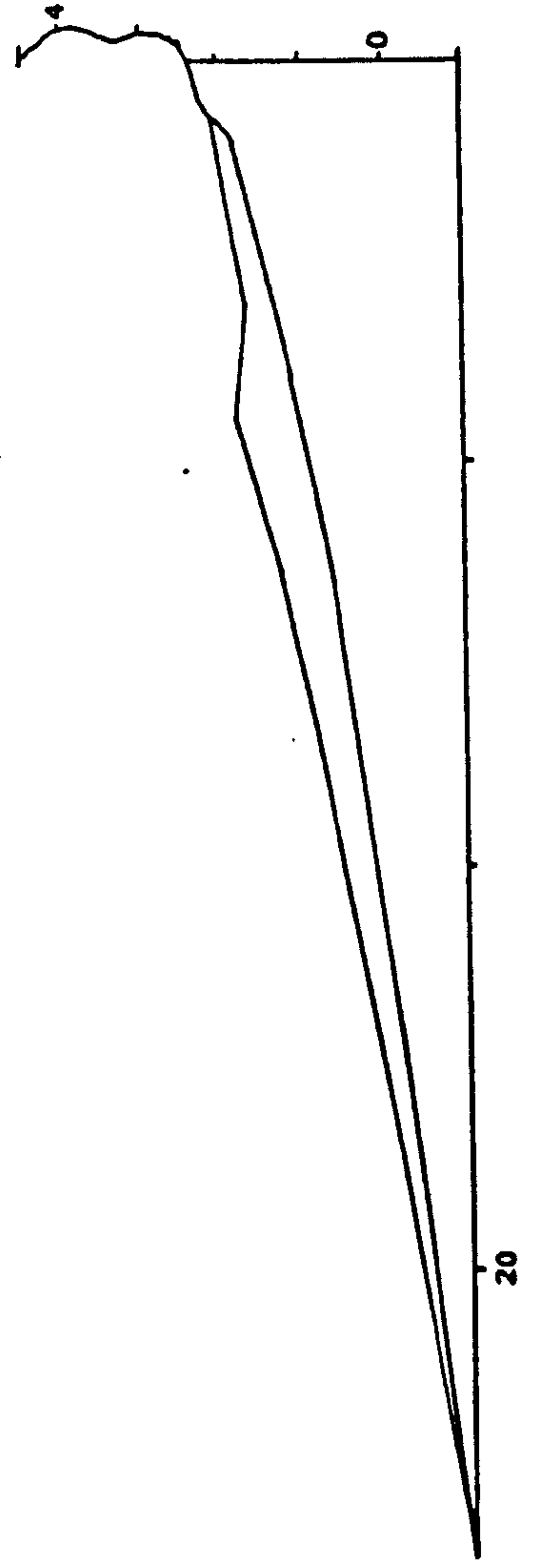
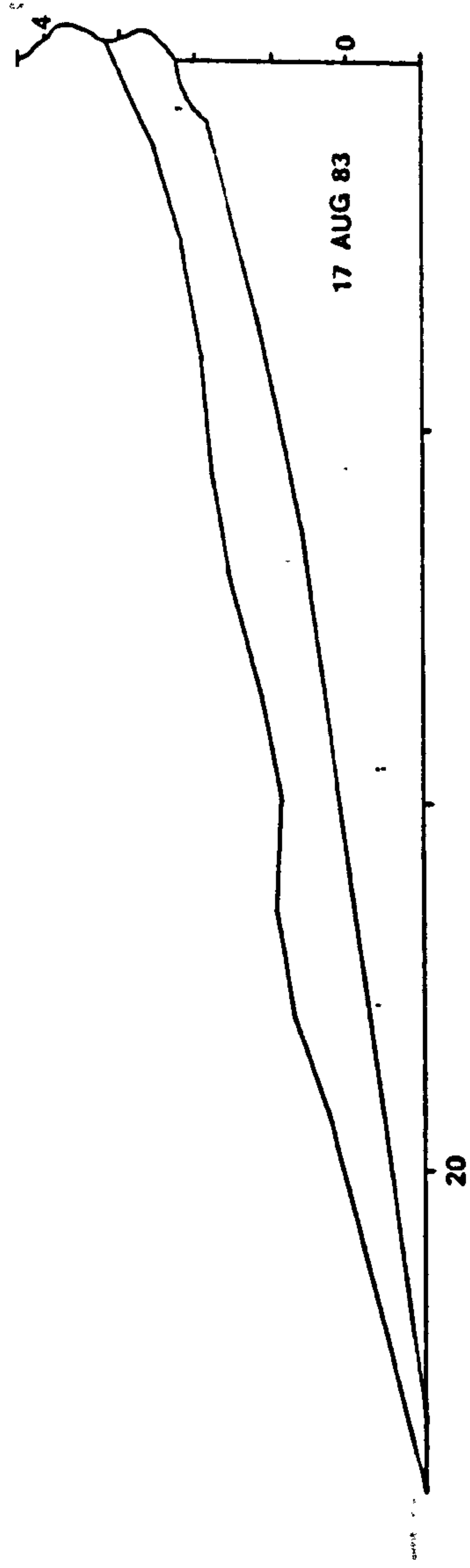
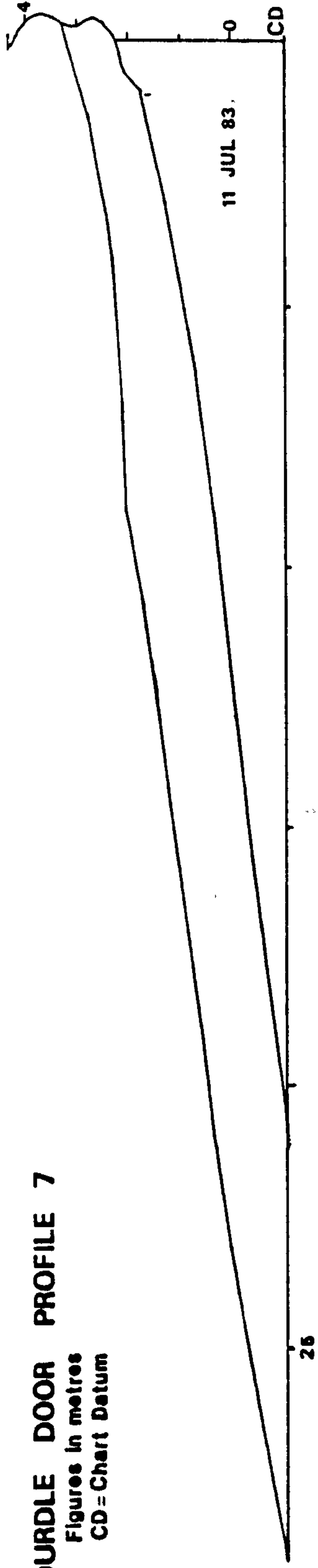


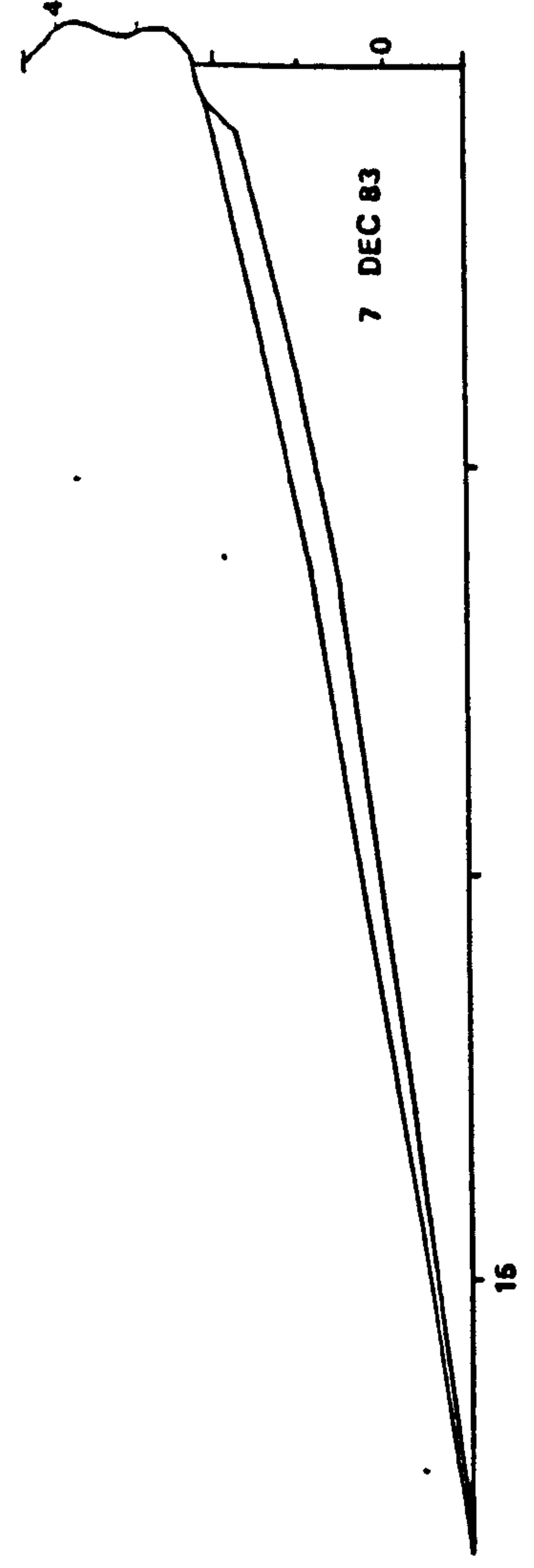
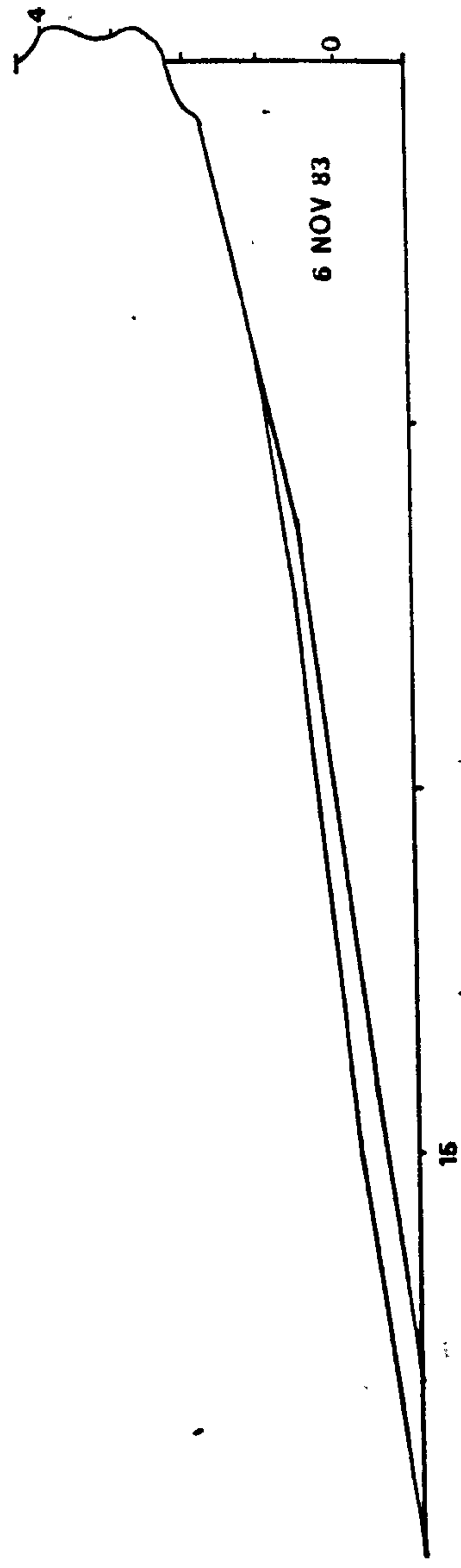
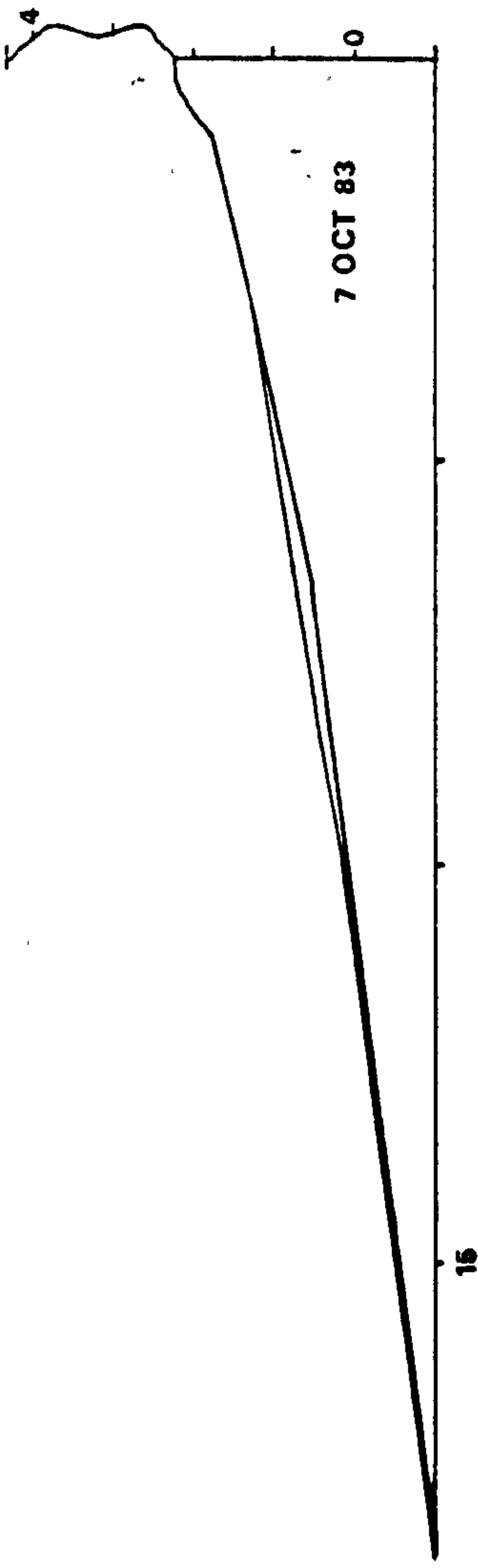


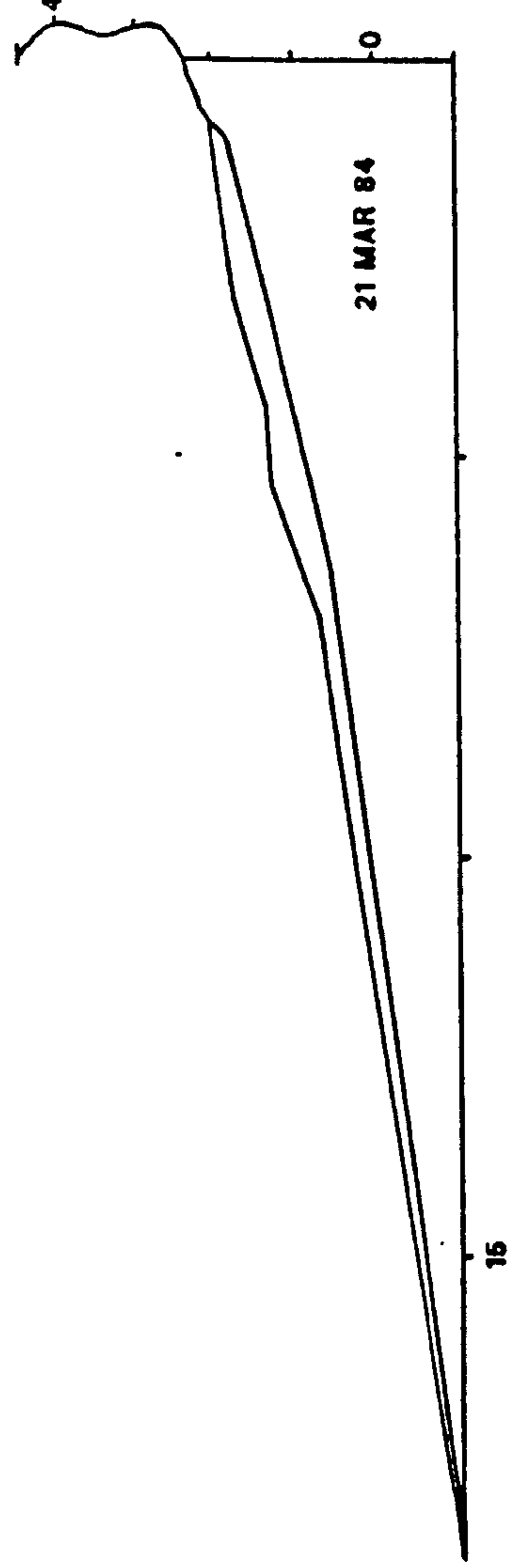
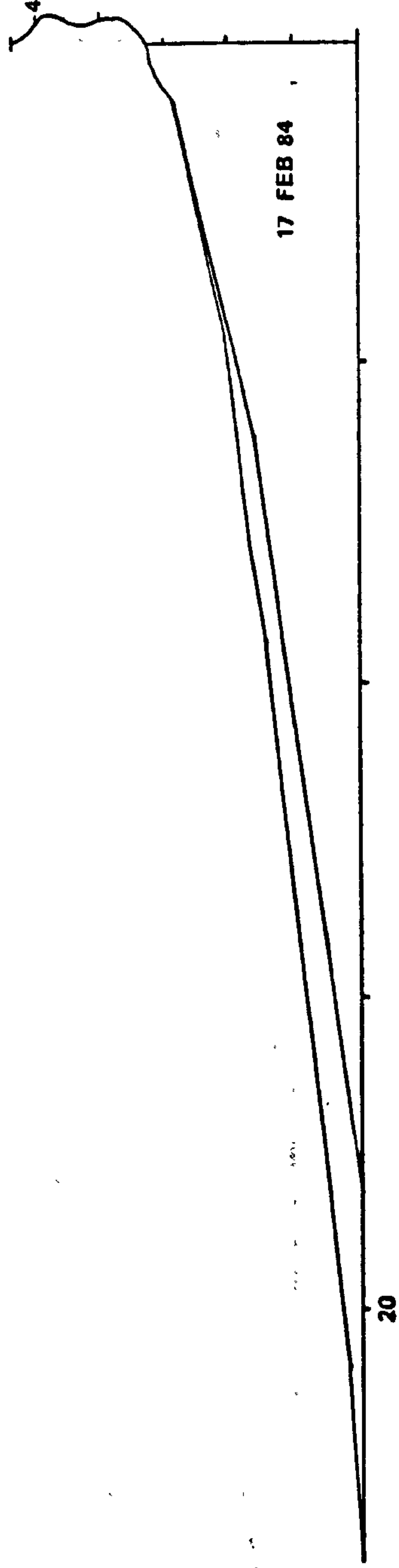
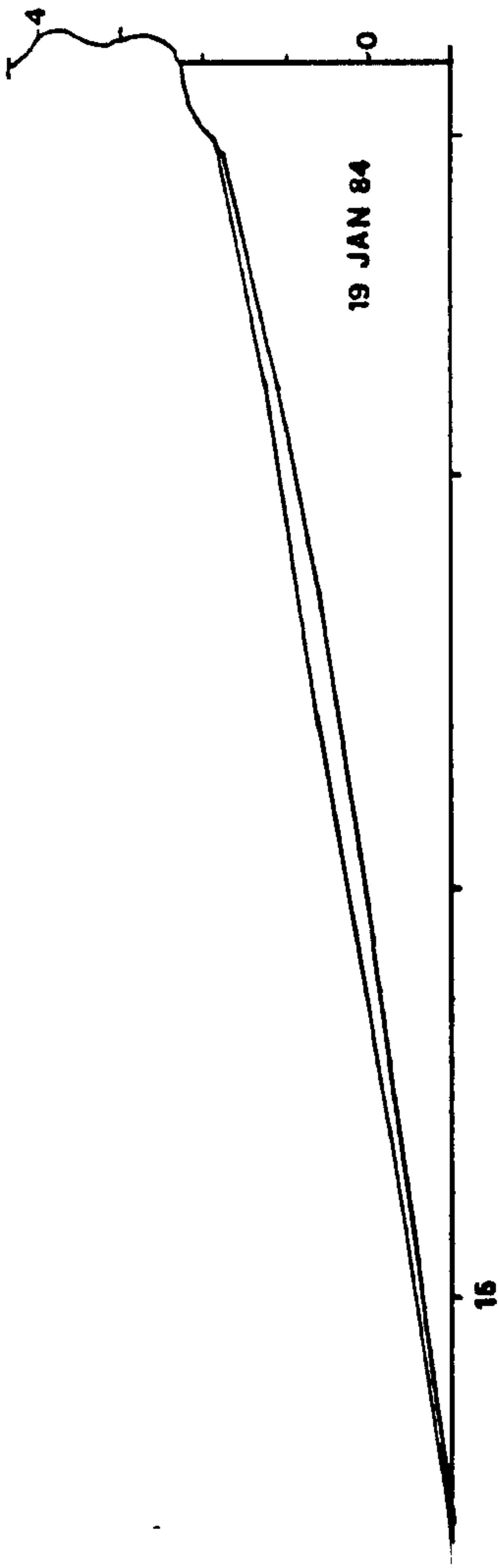


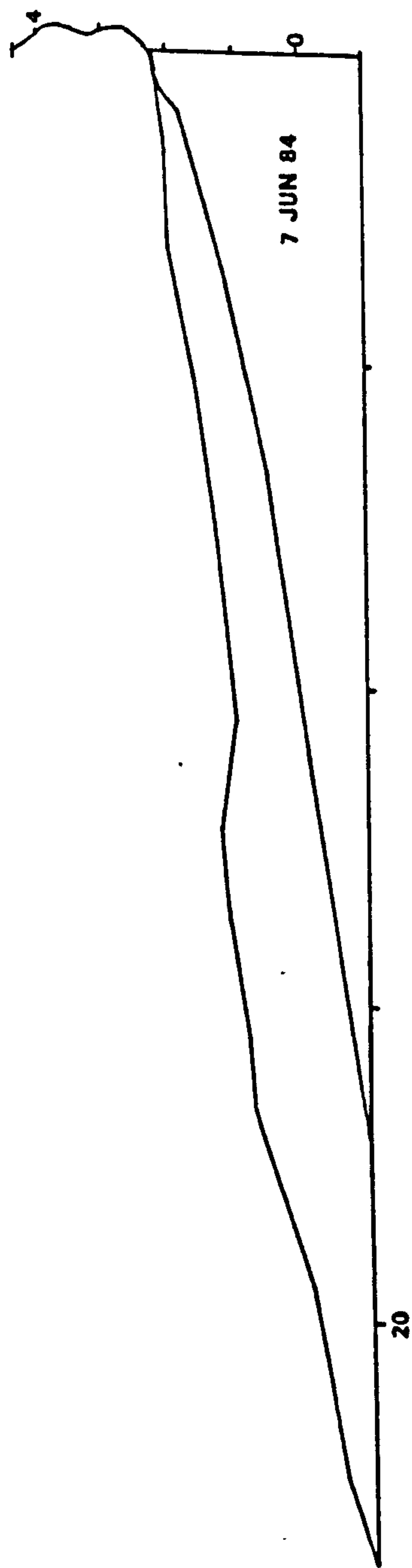
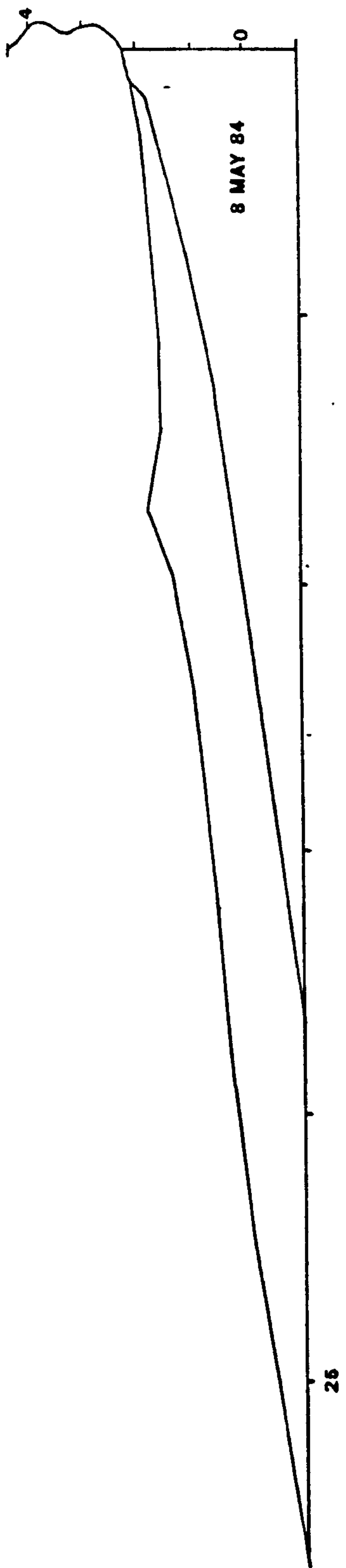
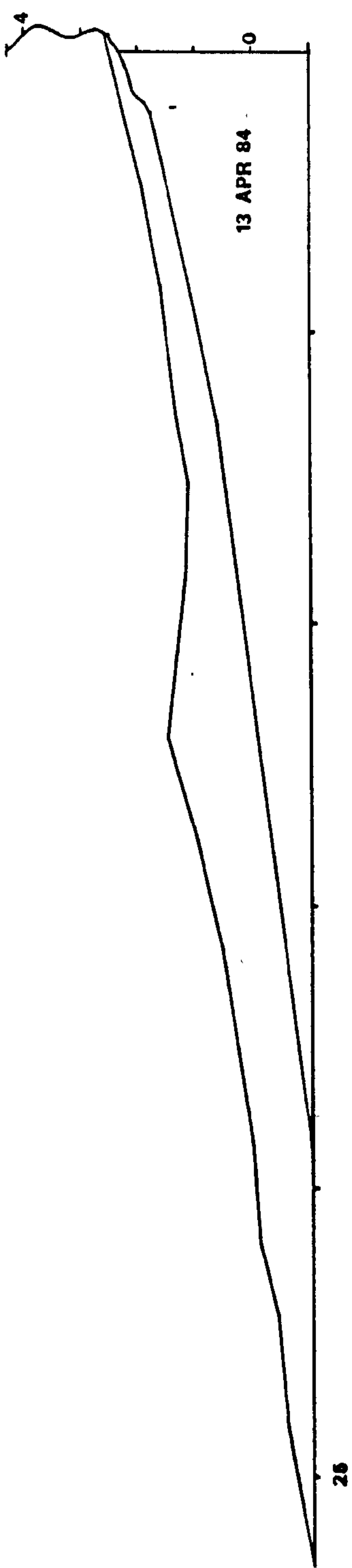
# DURDLE DOOR PROFILE 7

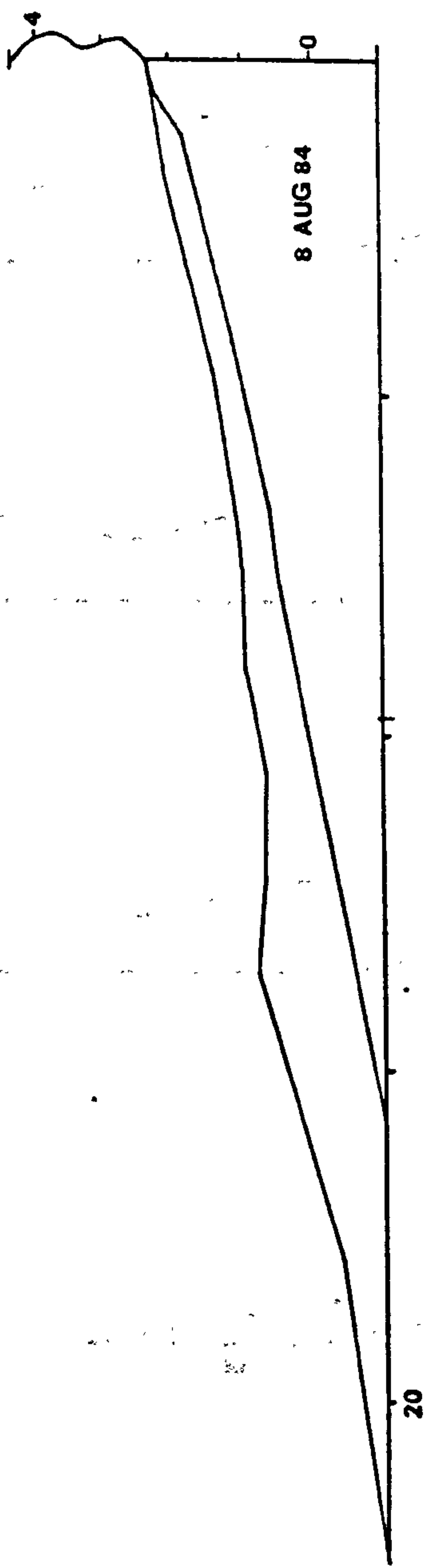
Figures in metres  
CD = Chart Datum





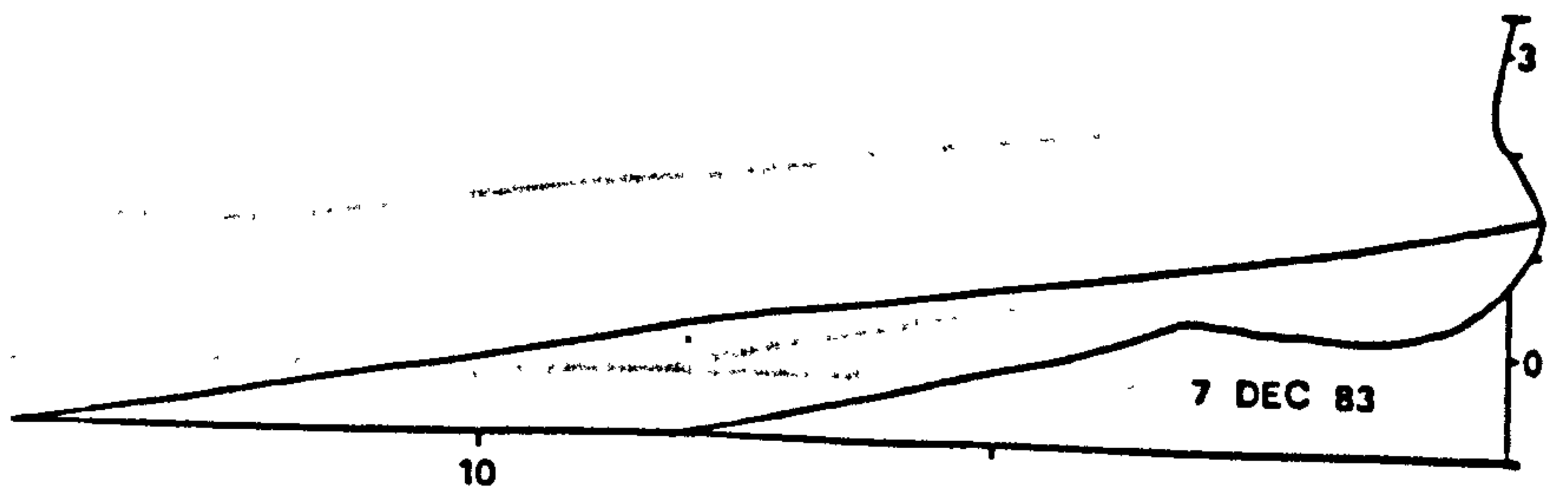
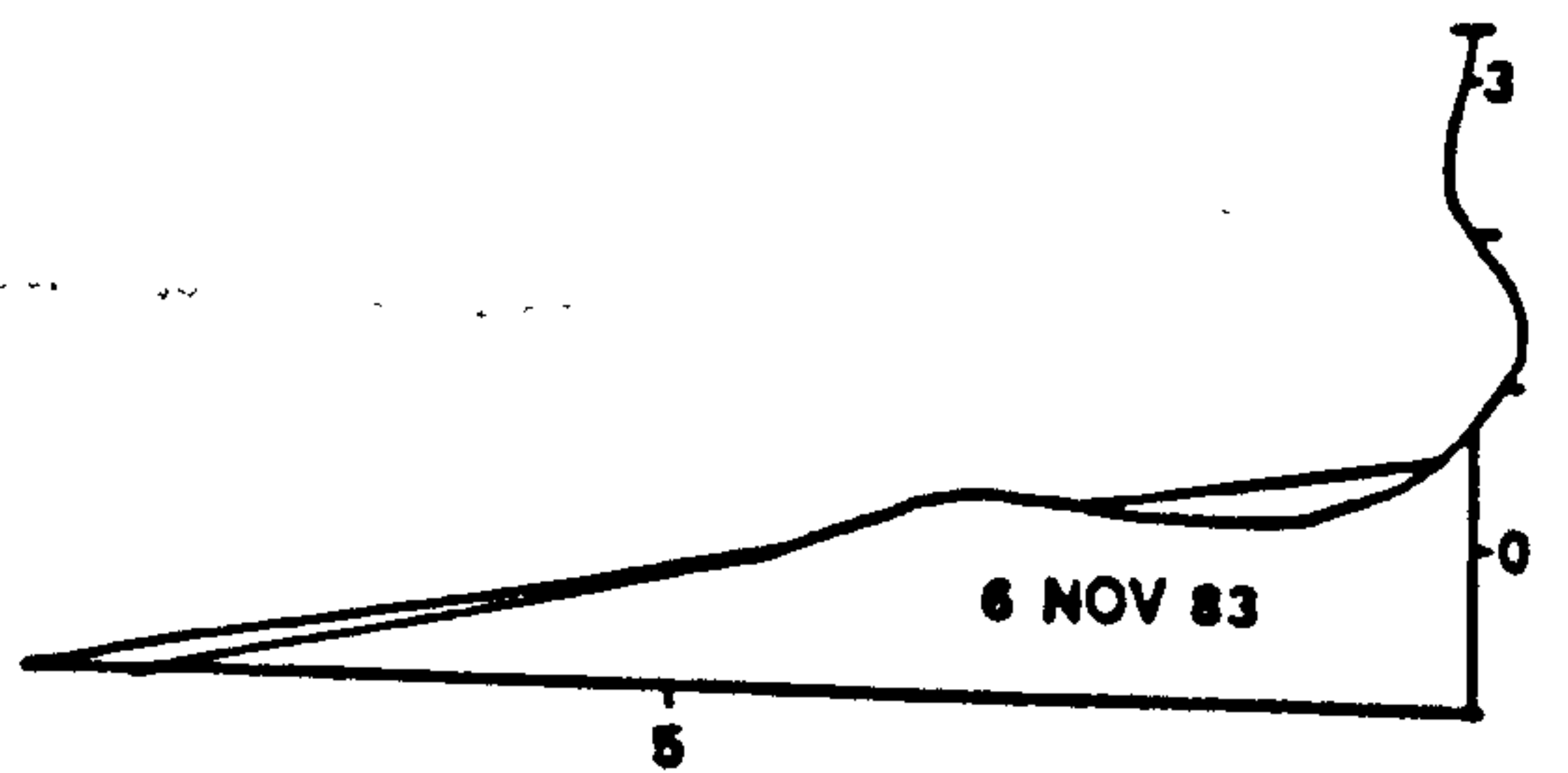
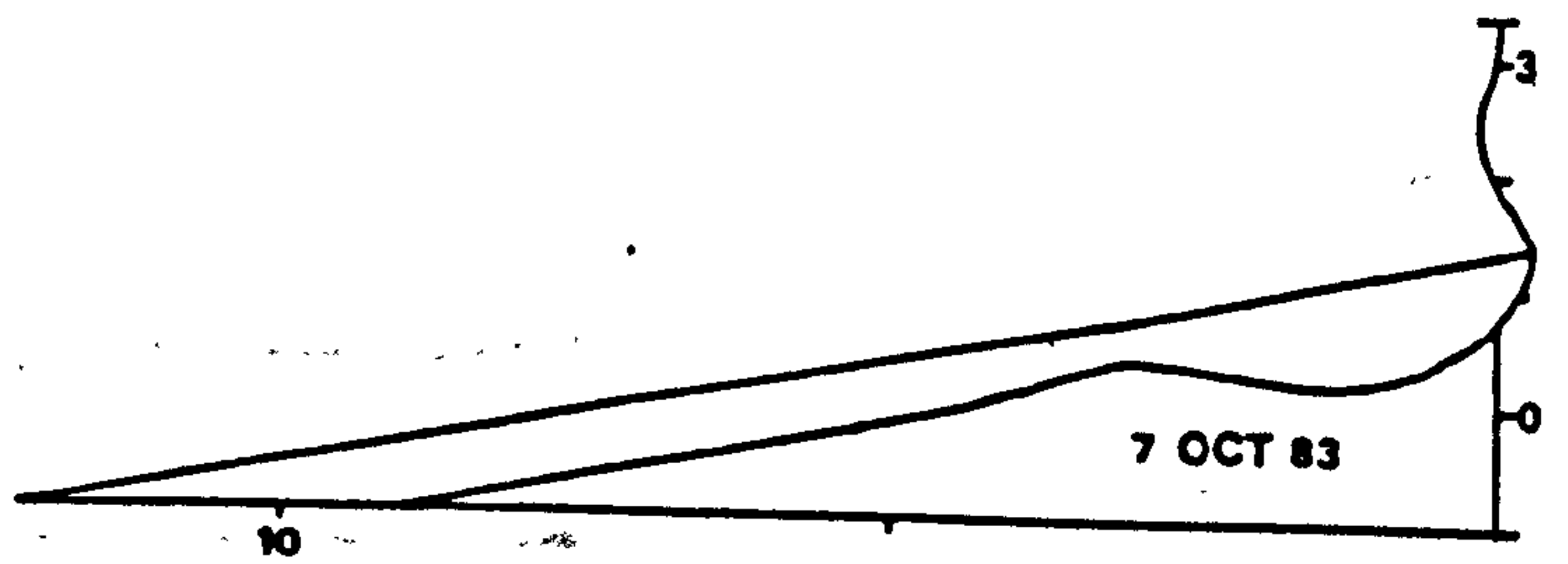
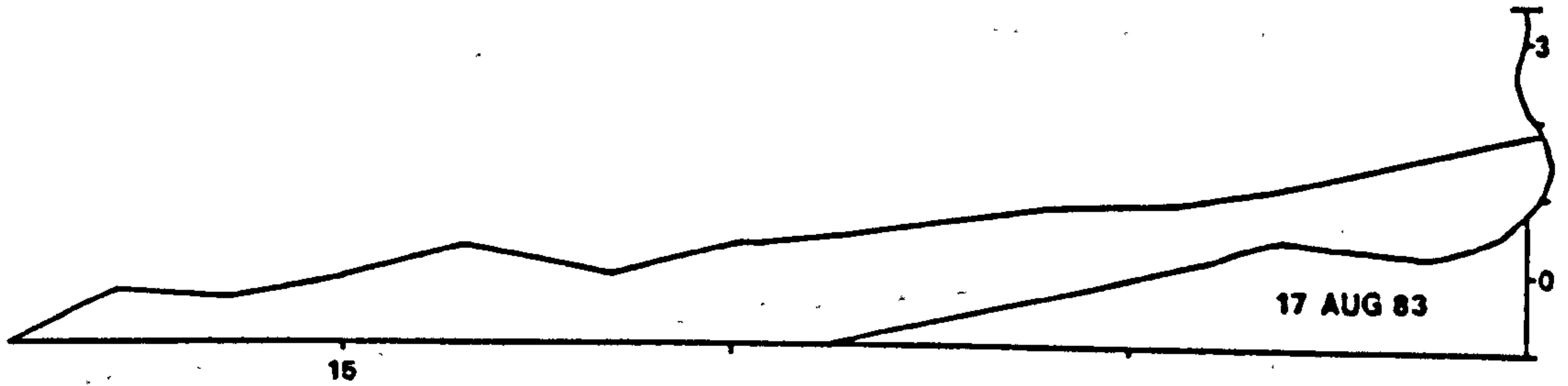
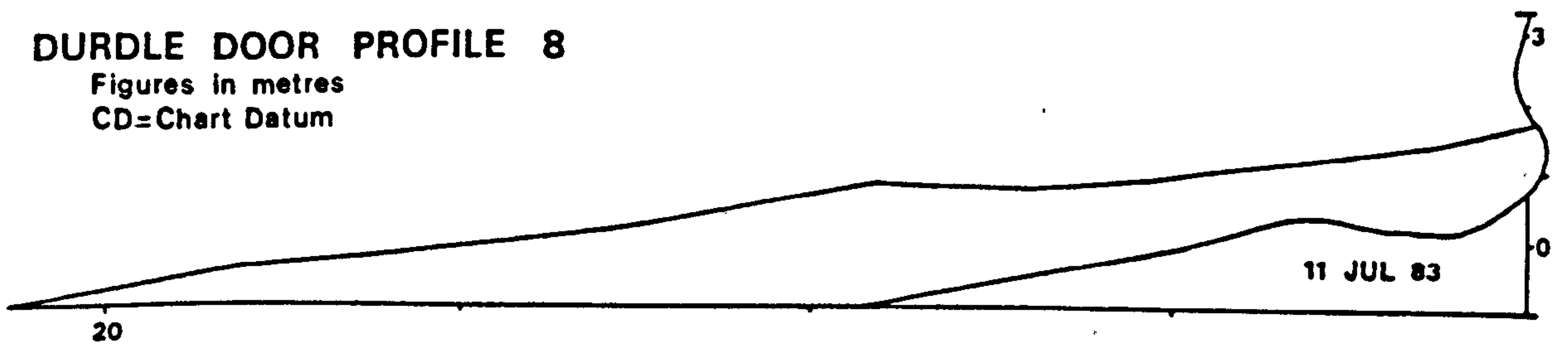


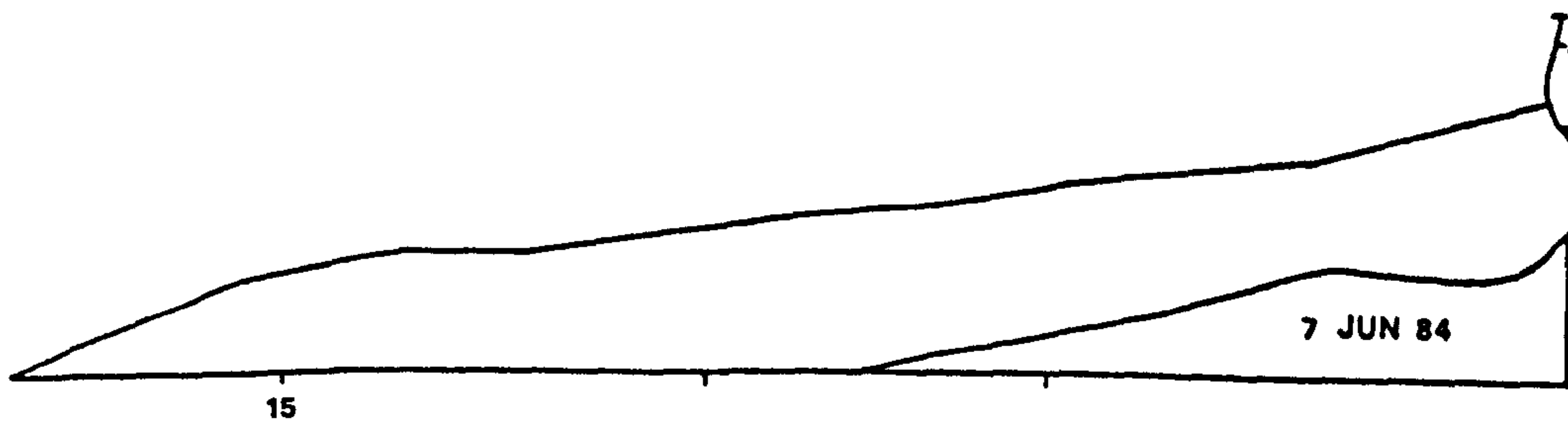
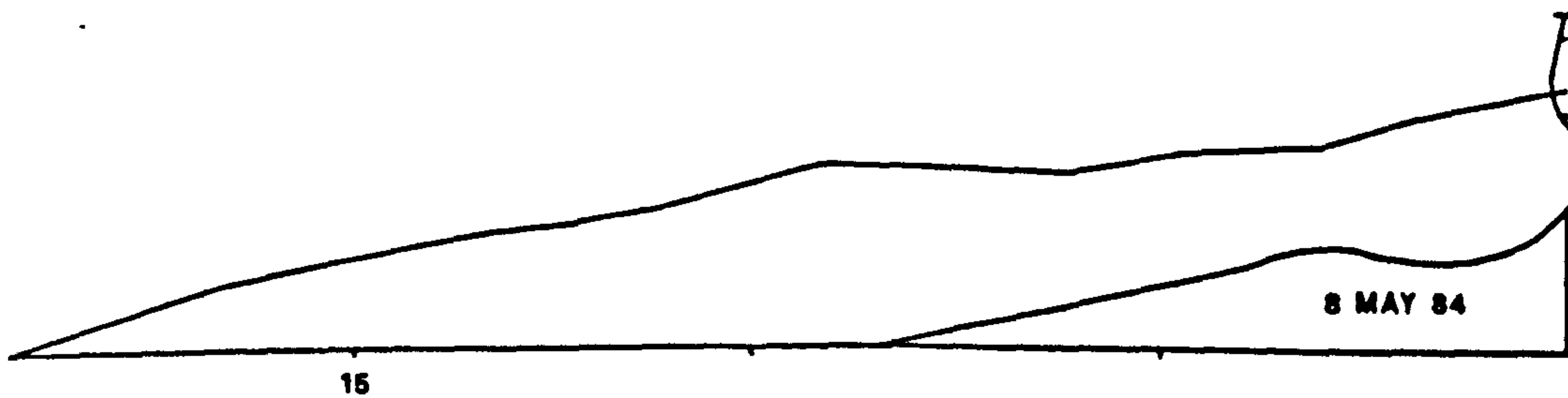
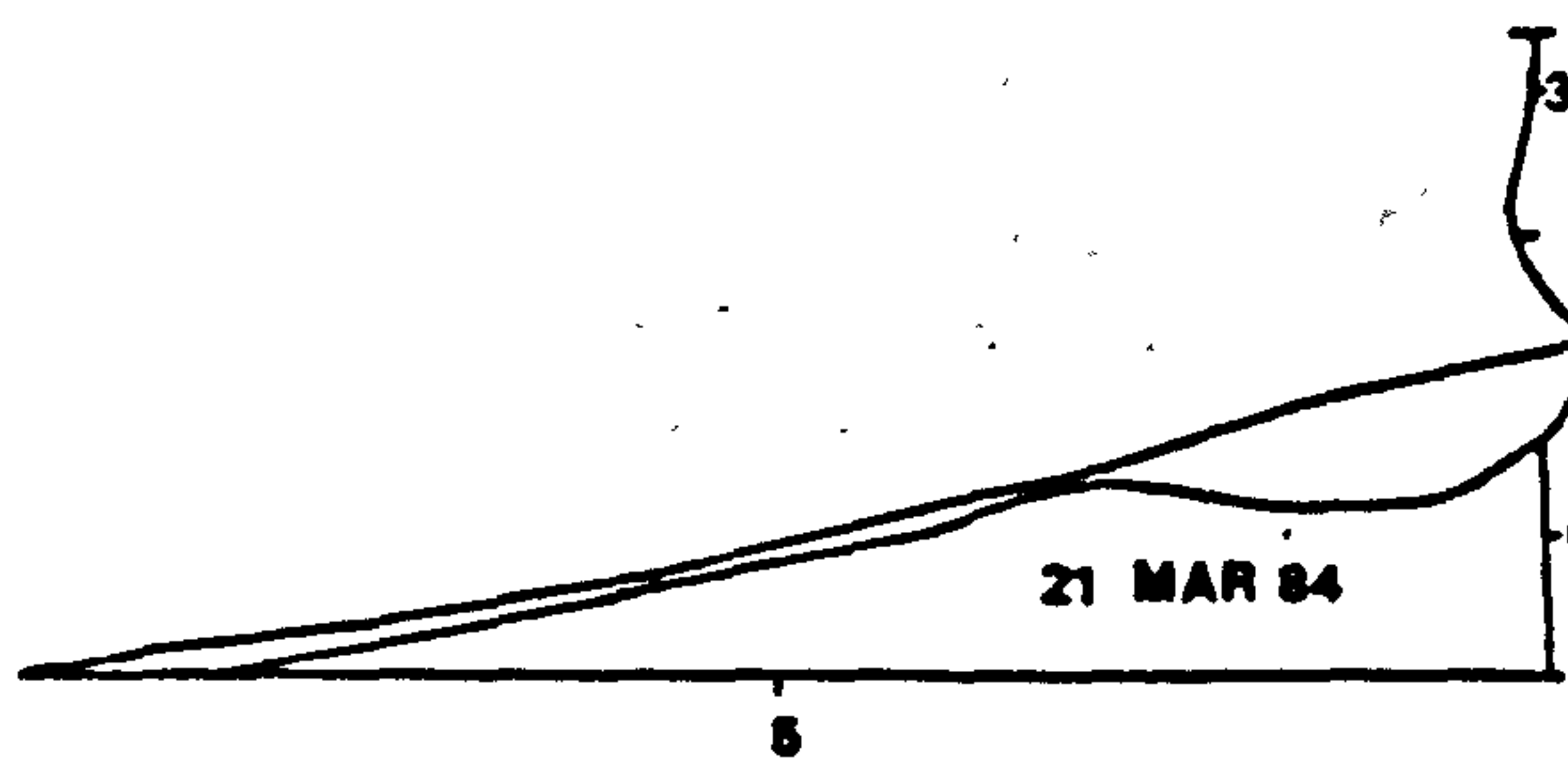
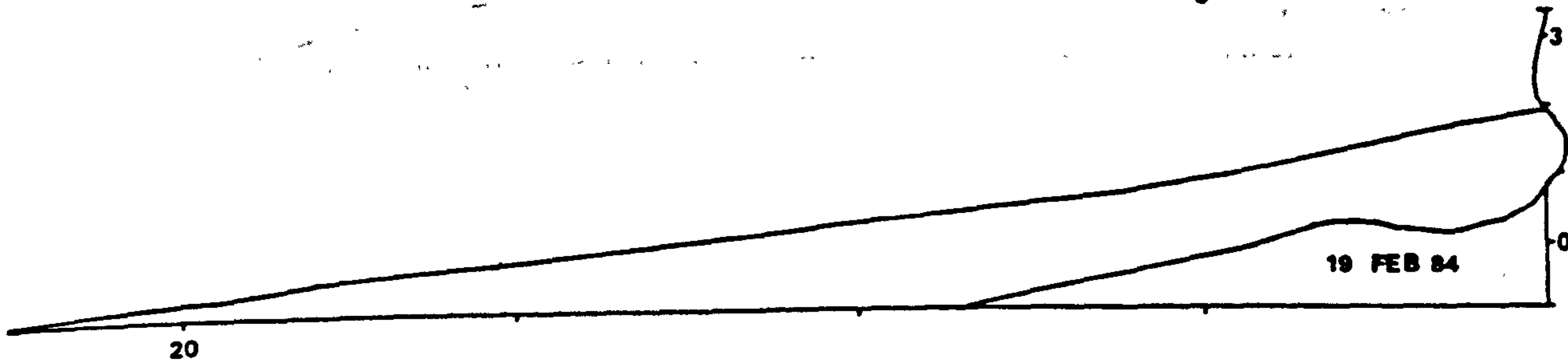
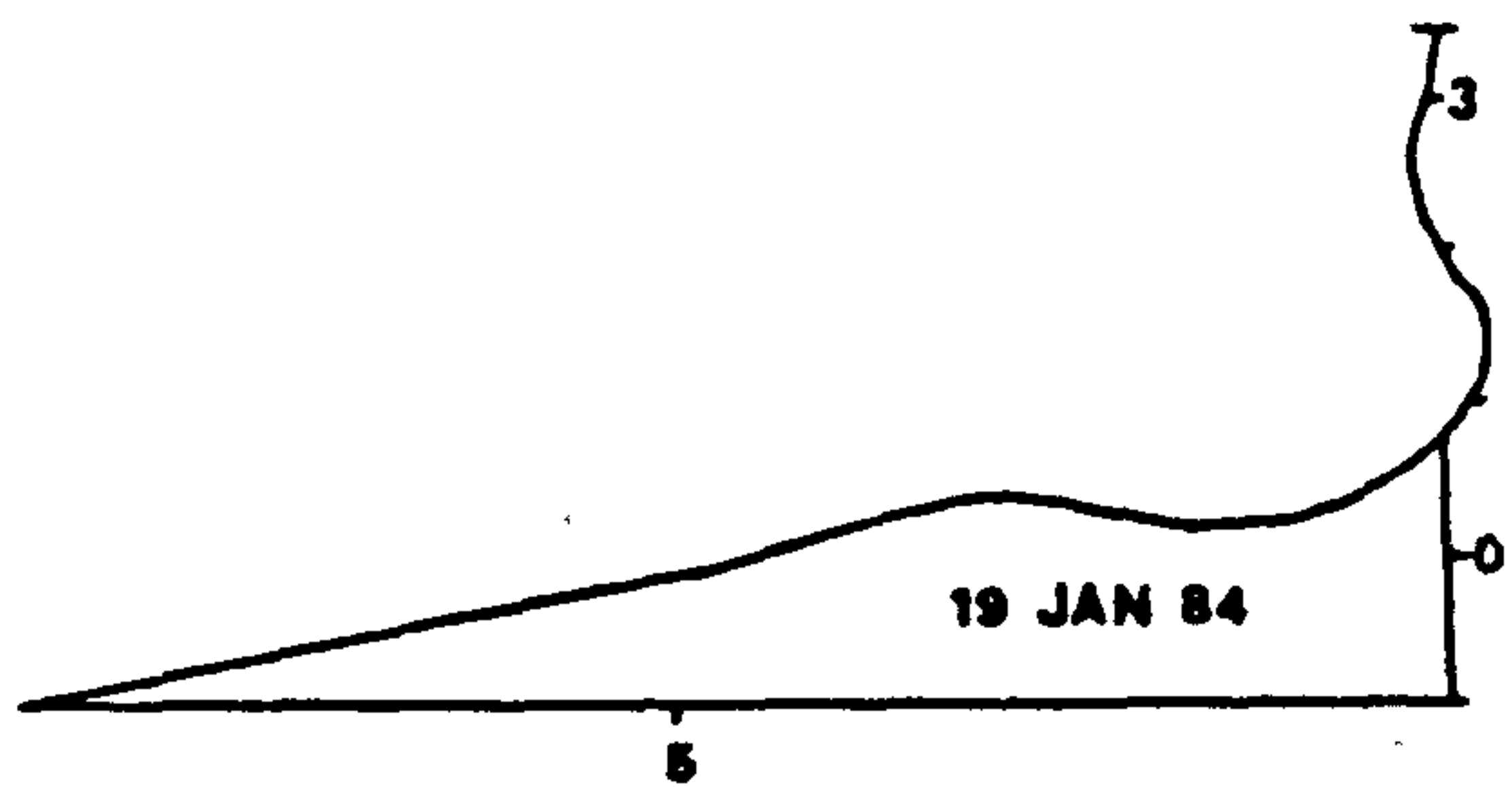


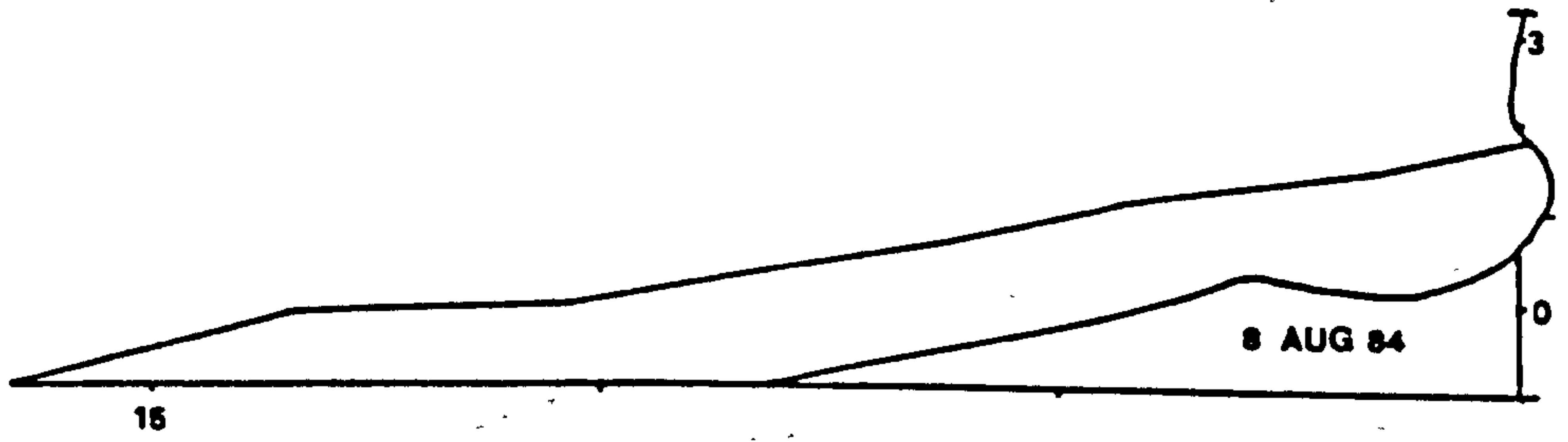
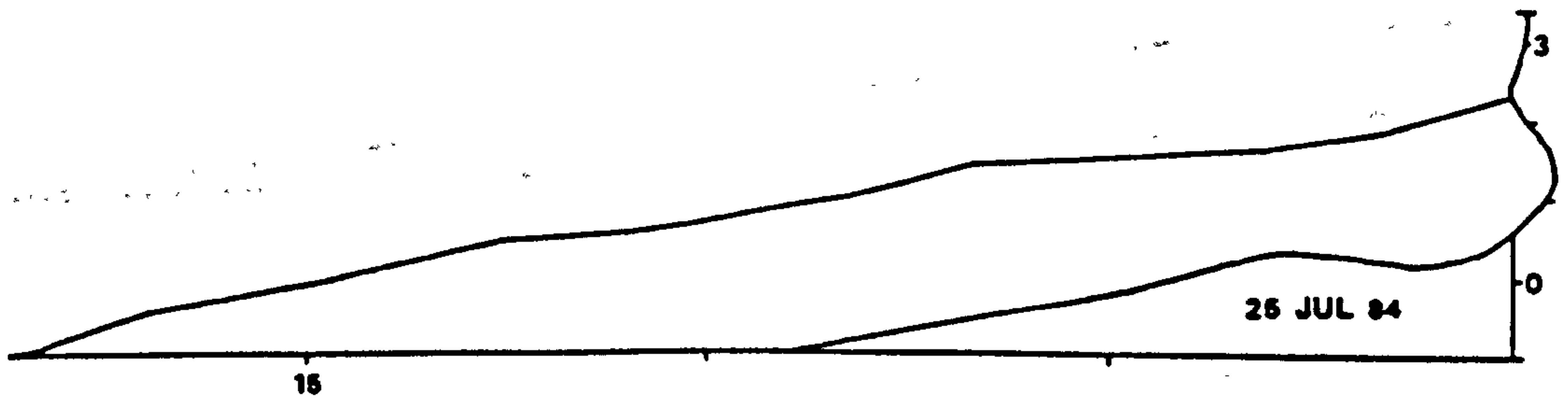


# DURDLE DOOR PROFILE 8

Figures in metres  
CD=Chart Datum



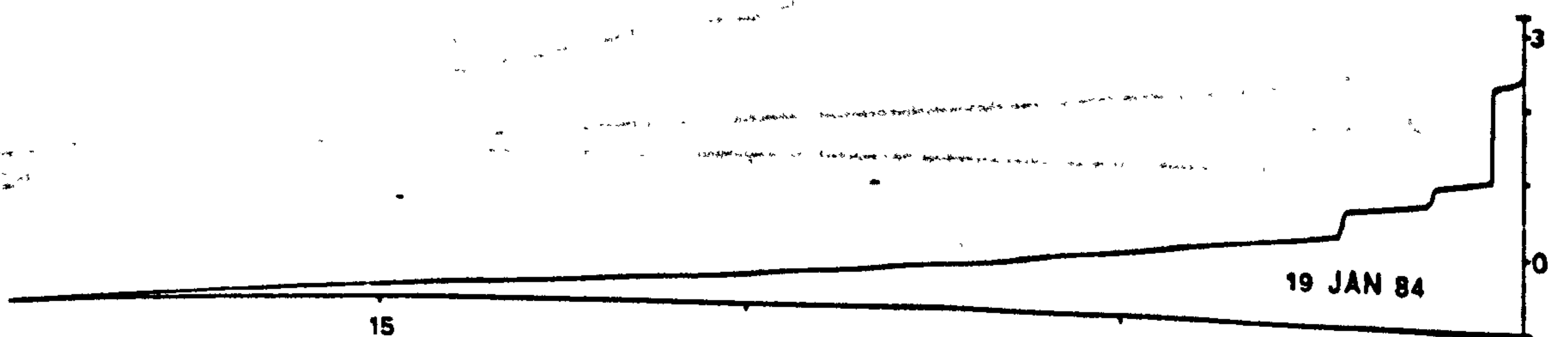
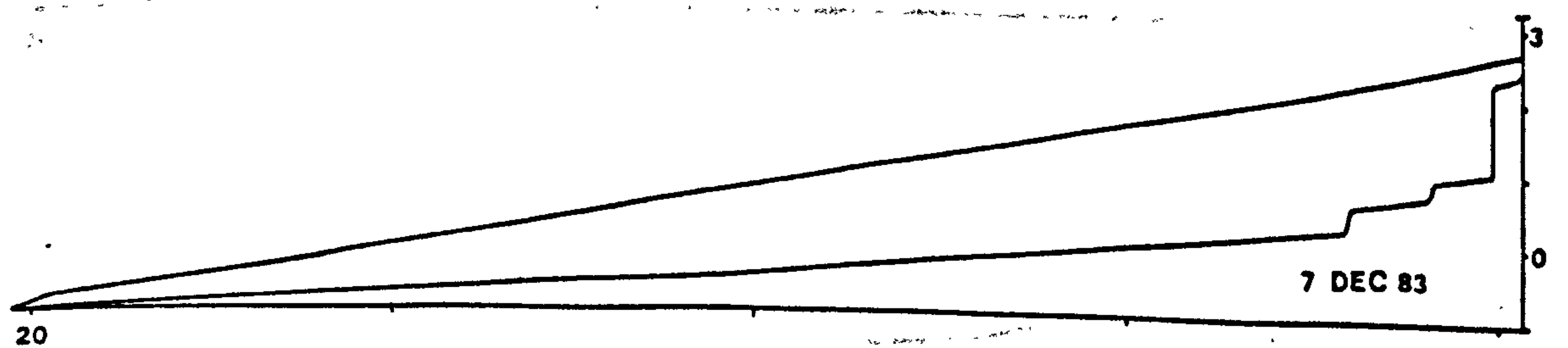
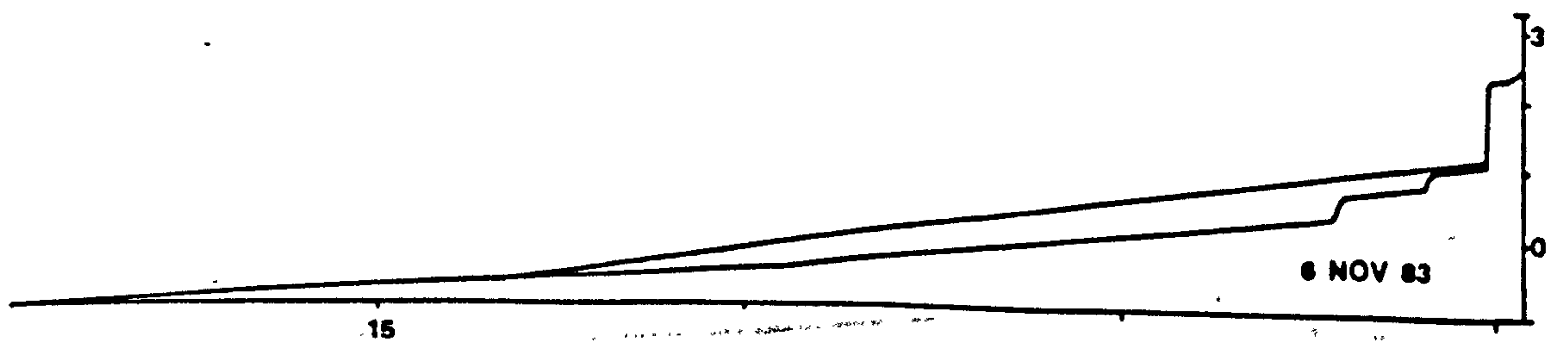
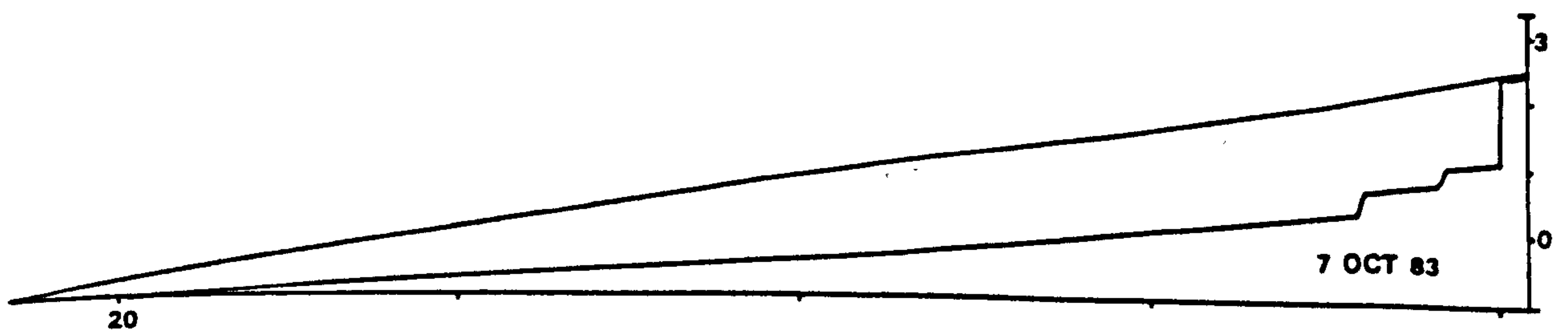
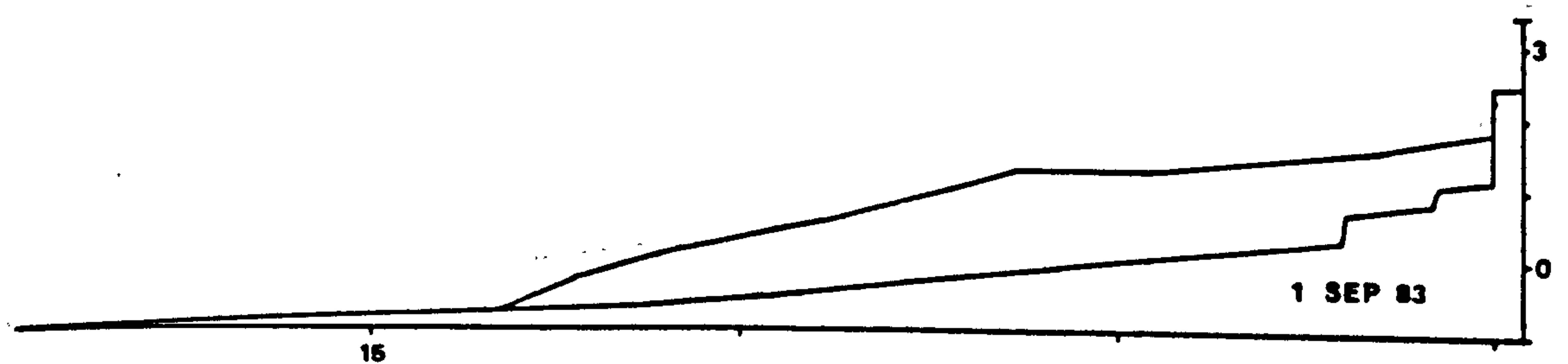
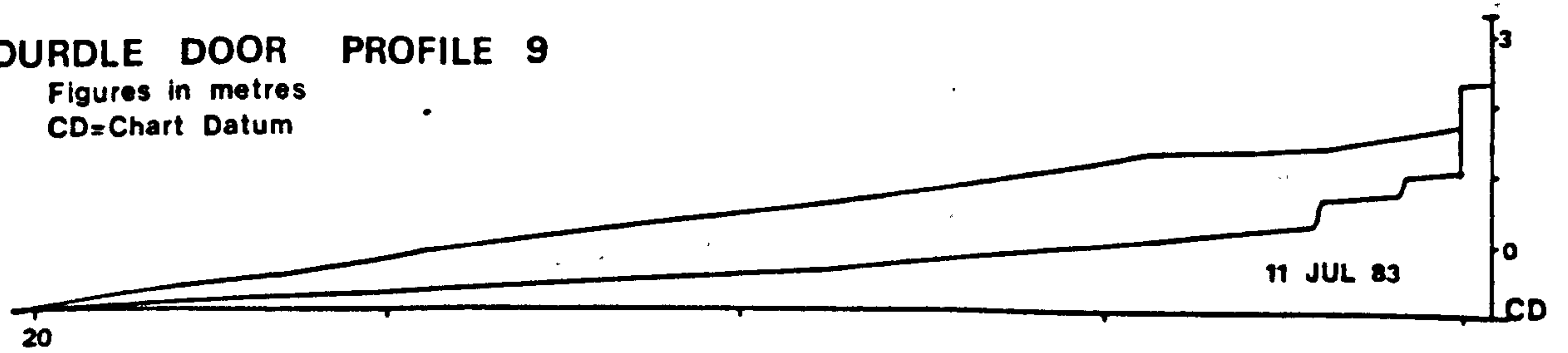


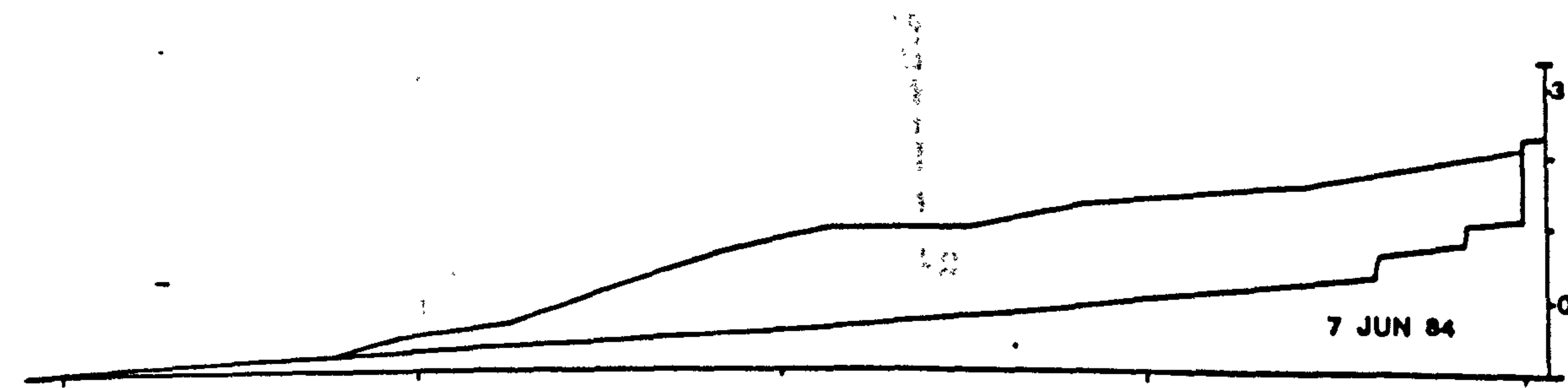
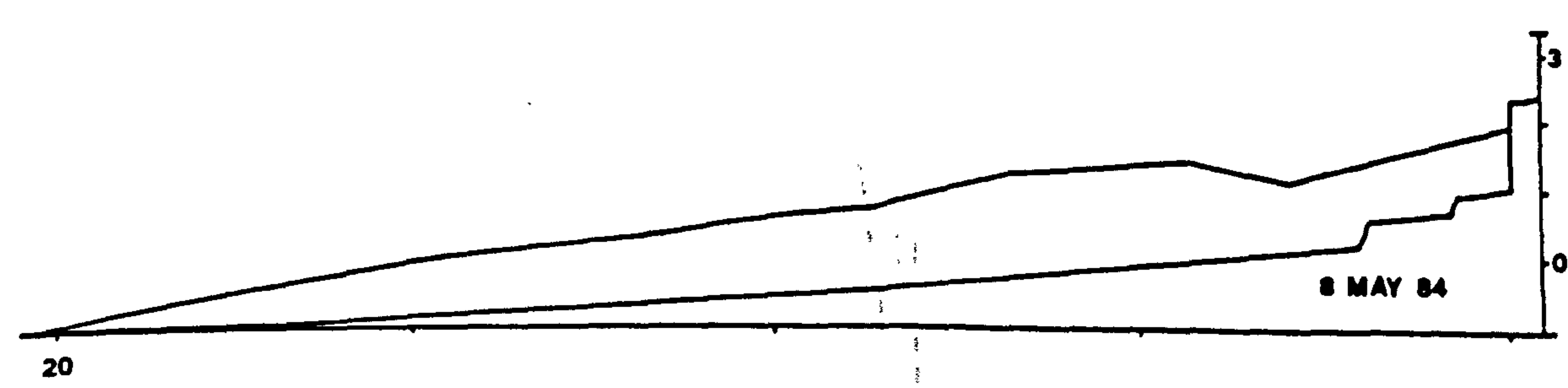
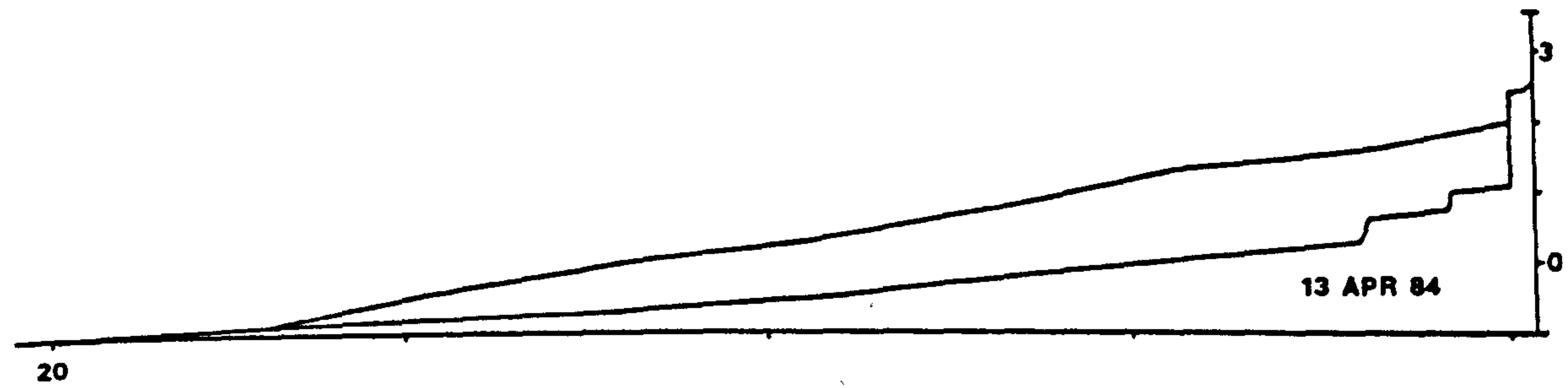
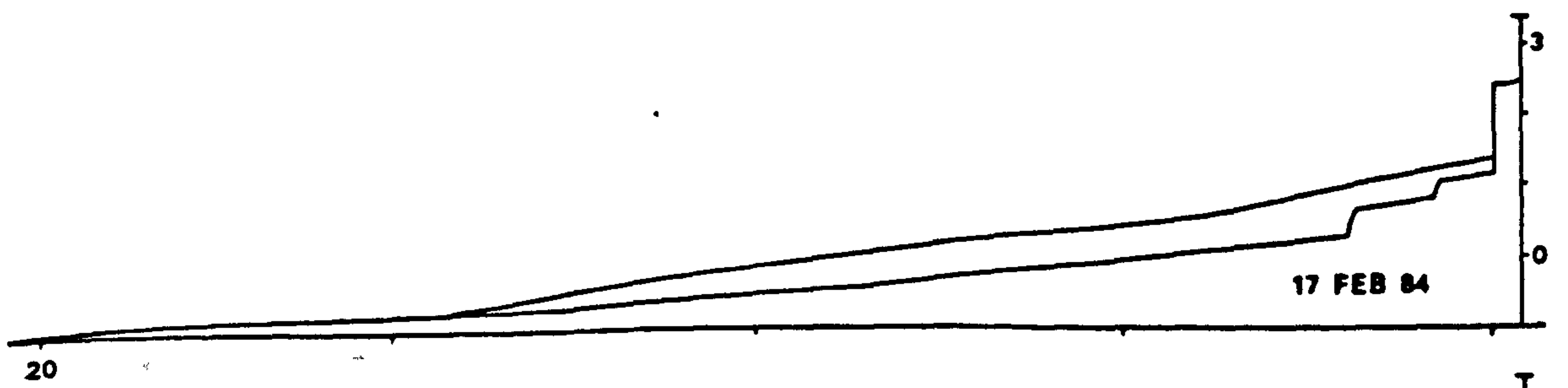




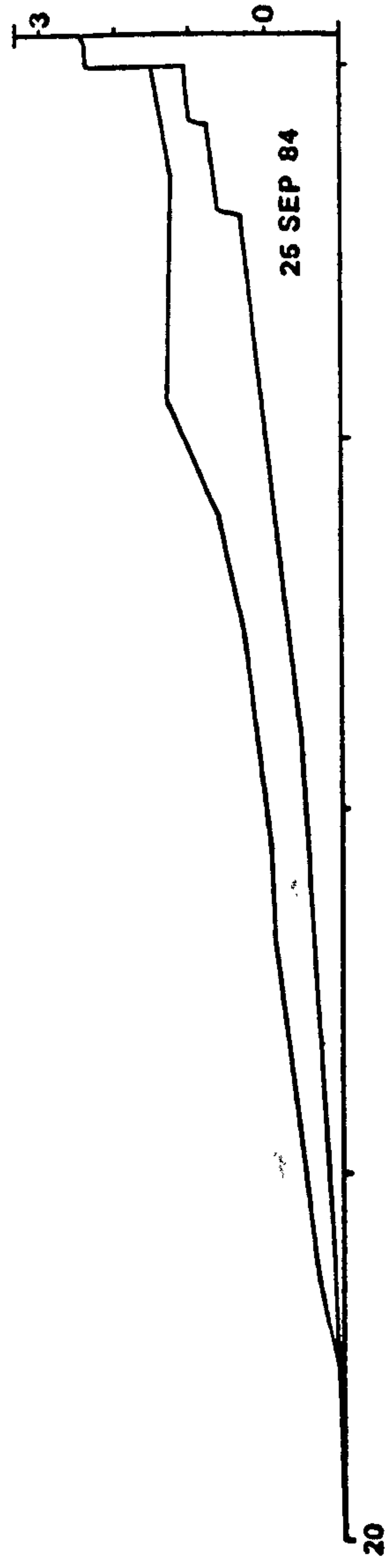
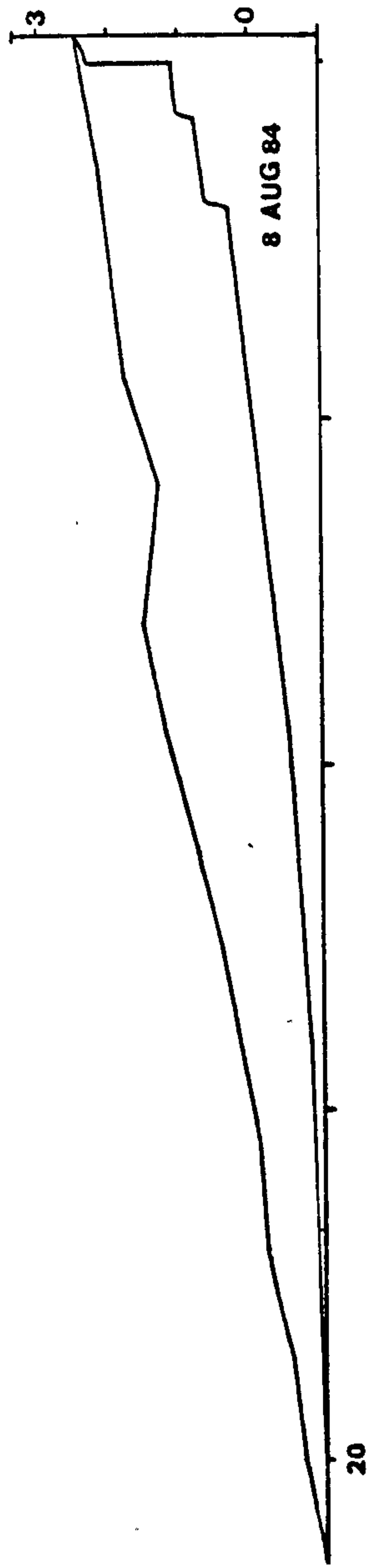
# DURDLE DOOR PROFILE 9

Figures in metres  
CD=Chart Datum



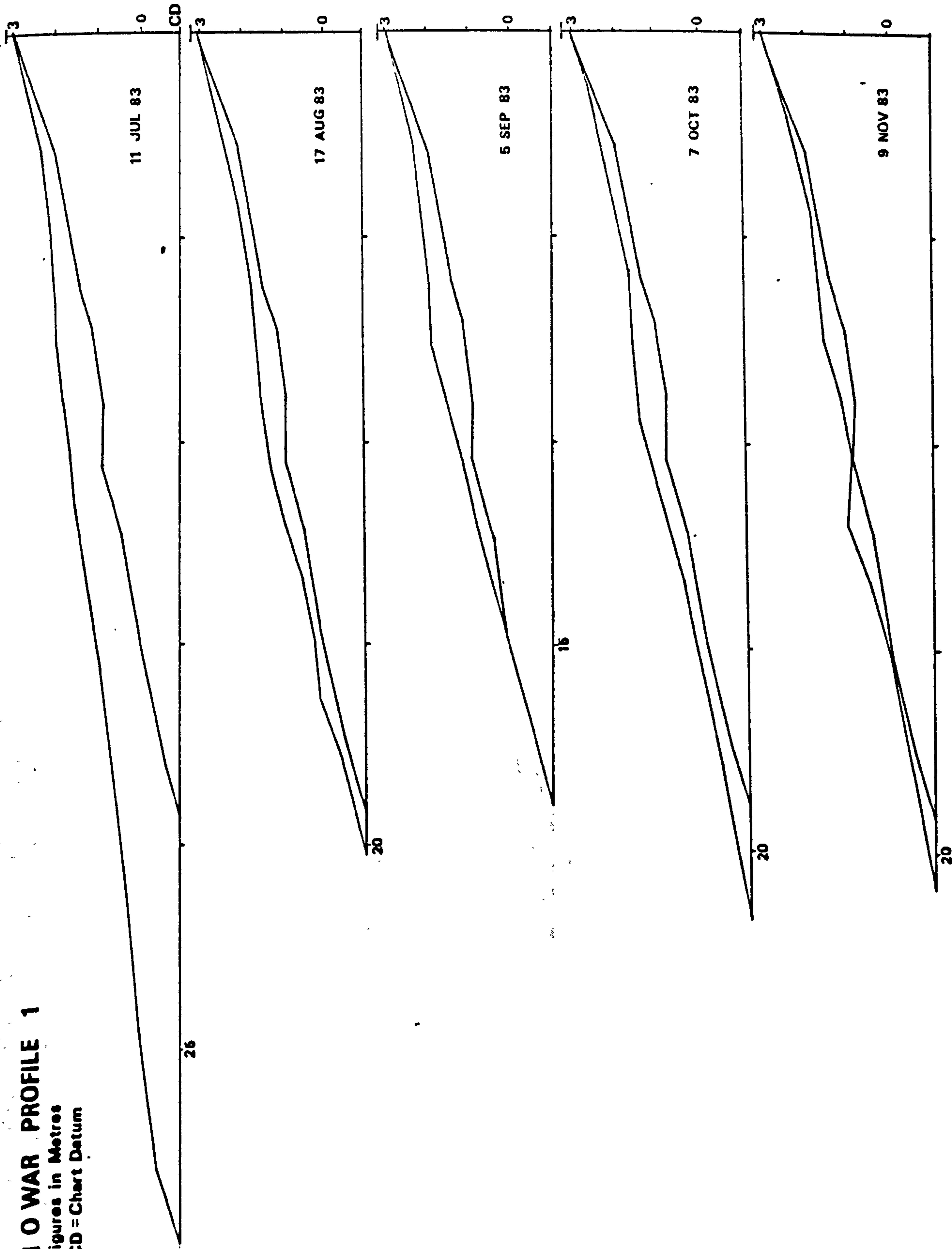


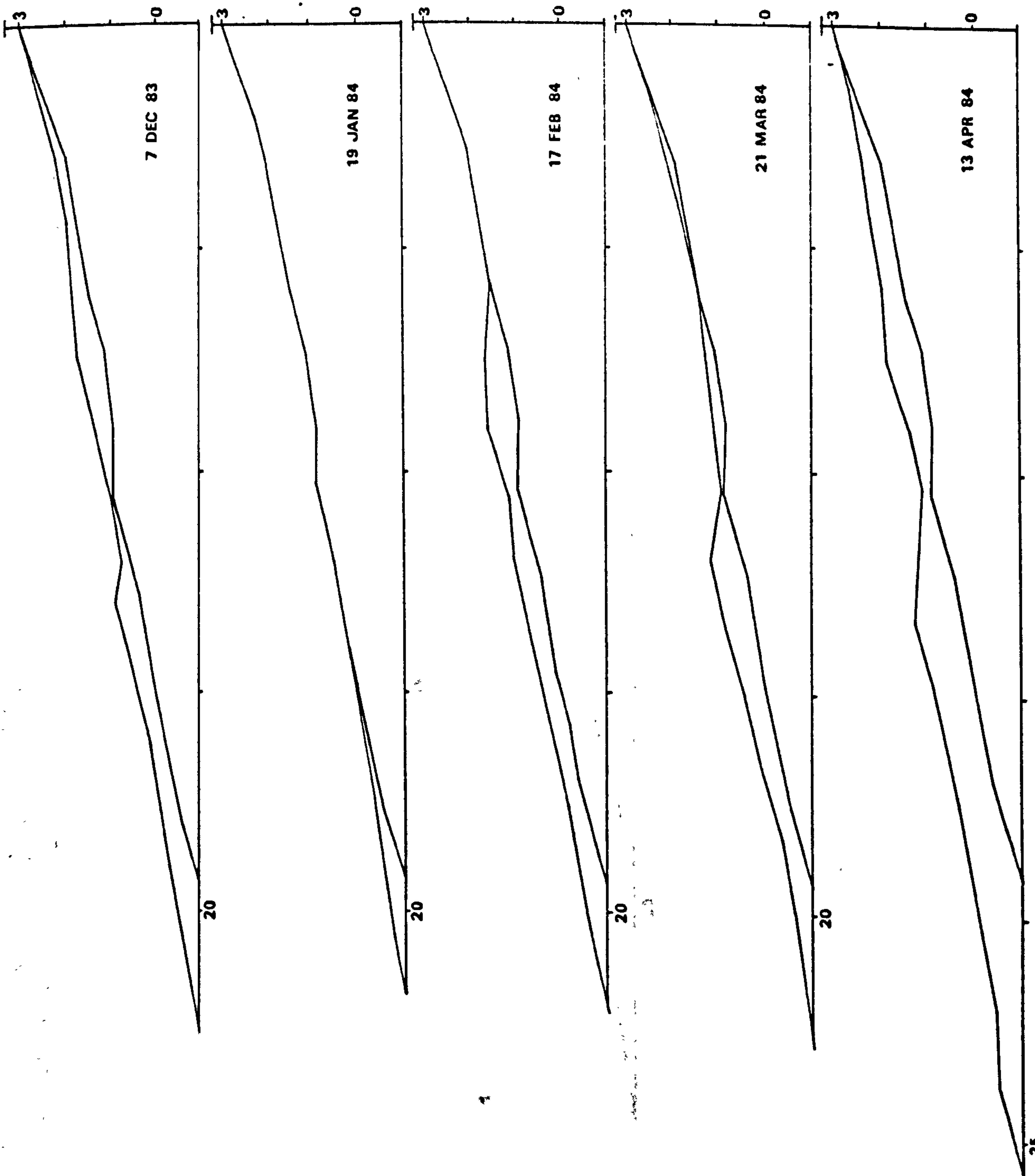
Faint vertical text on the left side of the page, possibly a page number or date.



# MAN O WAR PROFILE 1

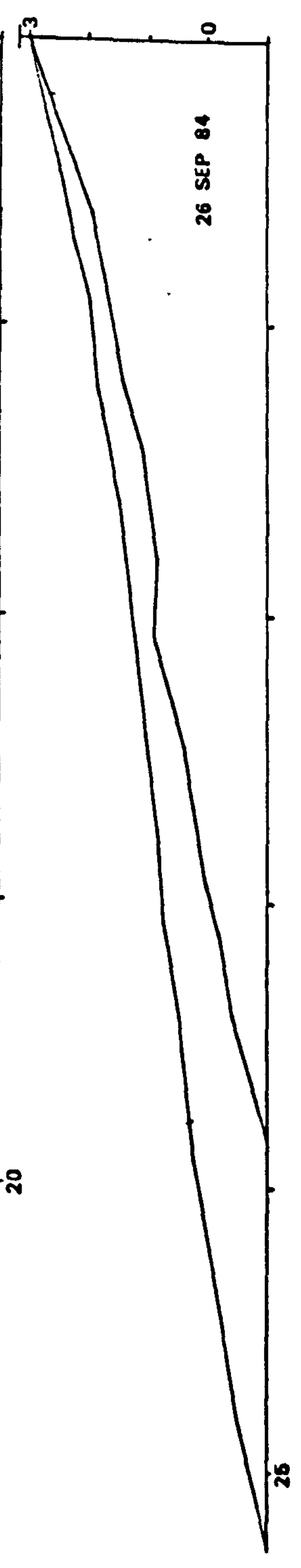
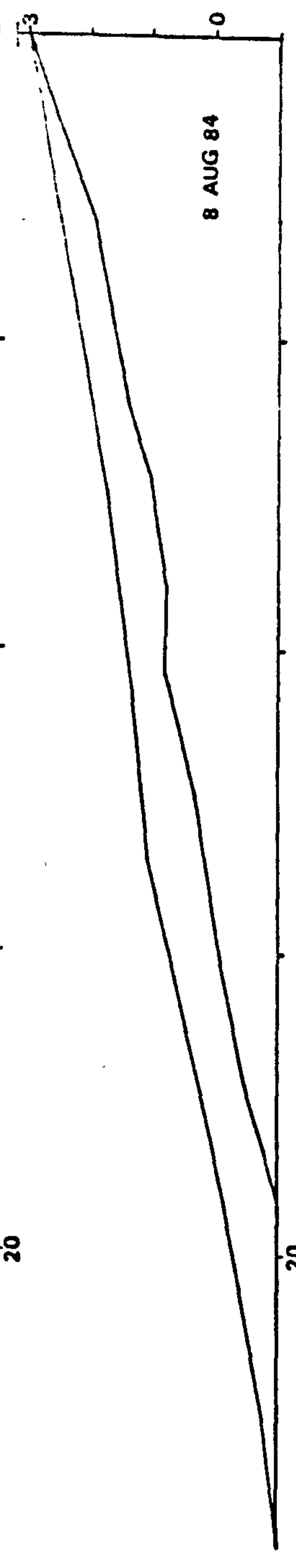
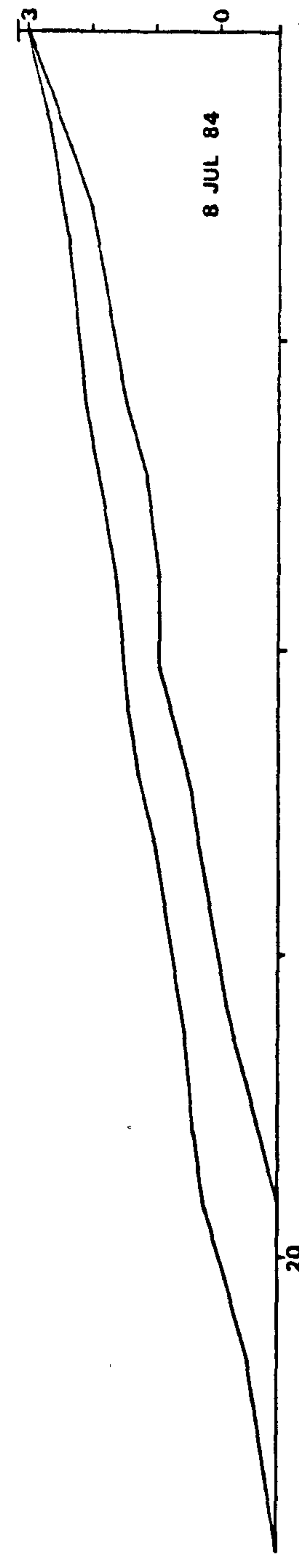
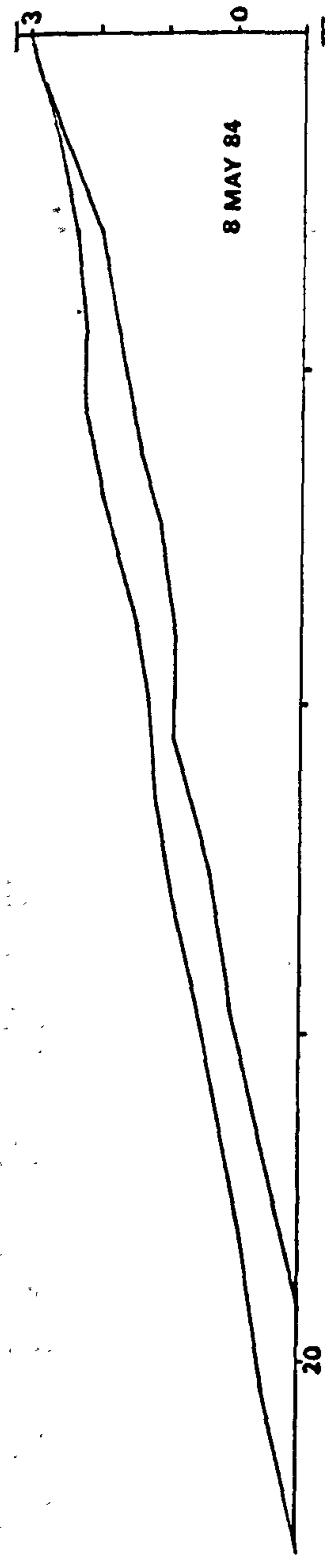
Figures in Metres  
CD = Chart Datum





1

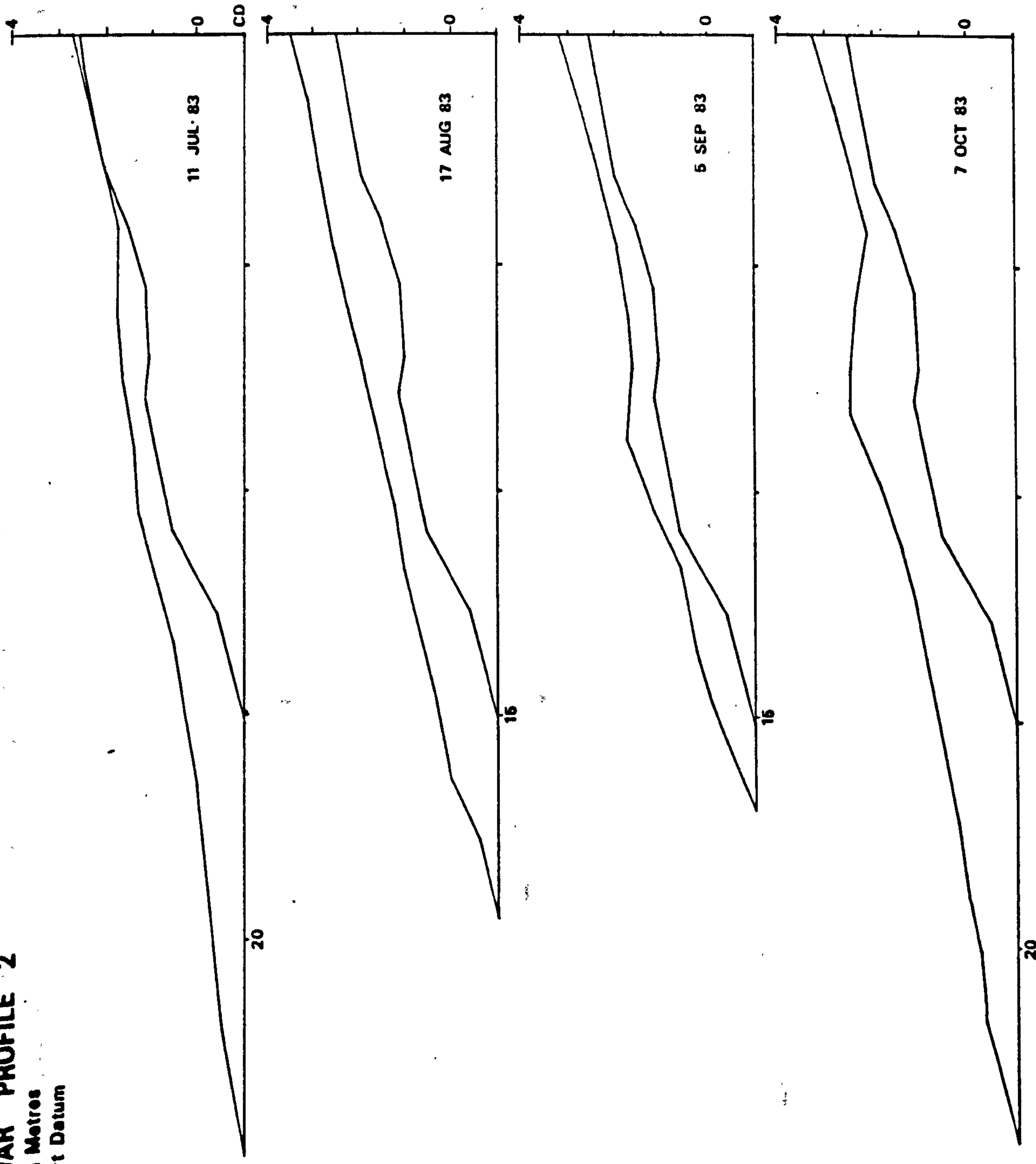
26

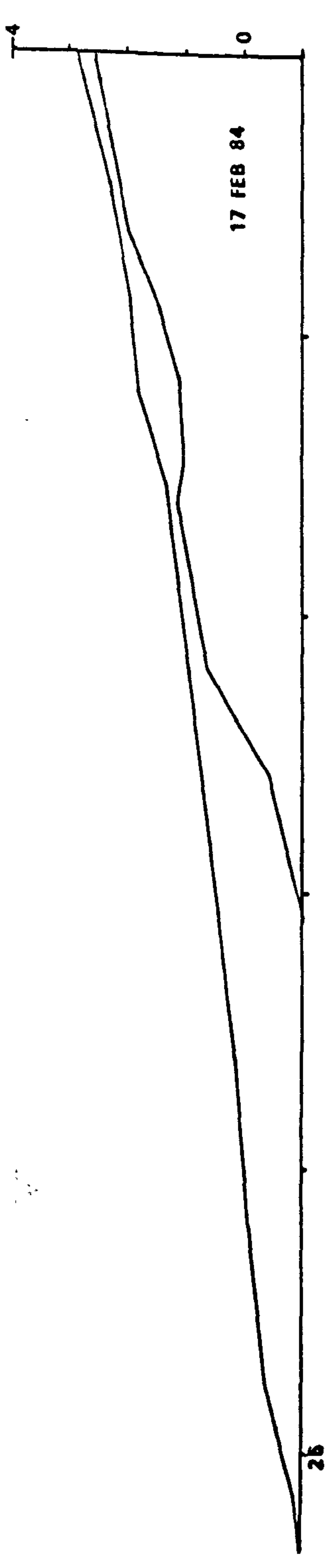
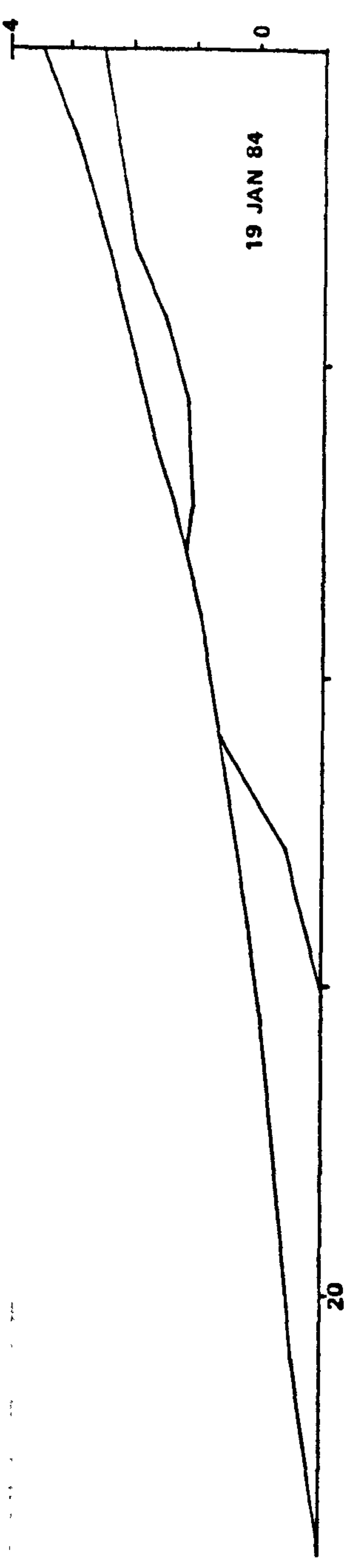
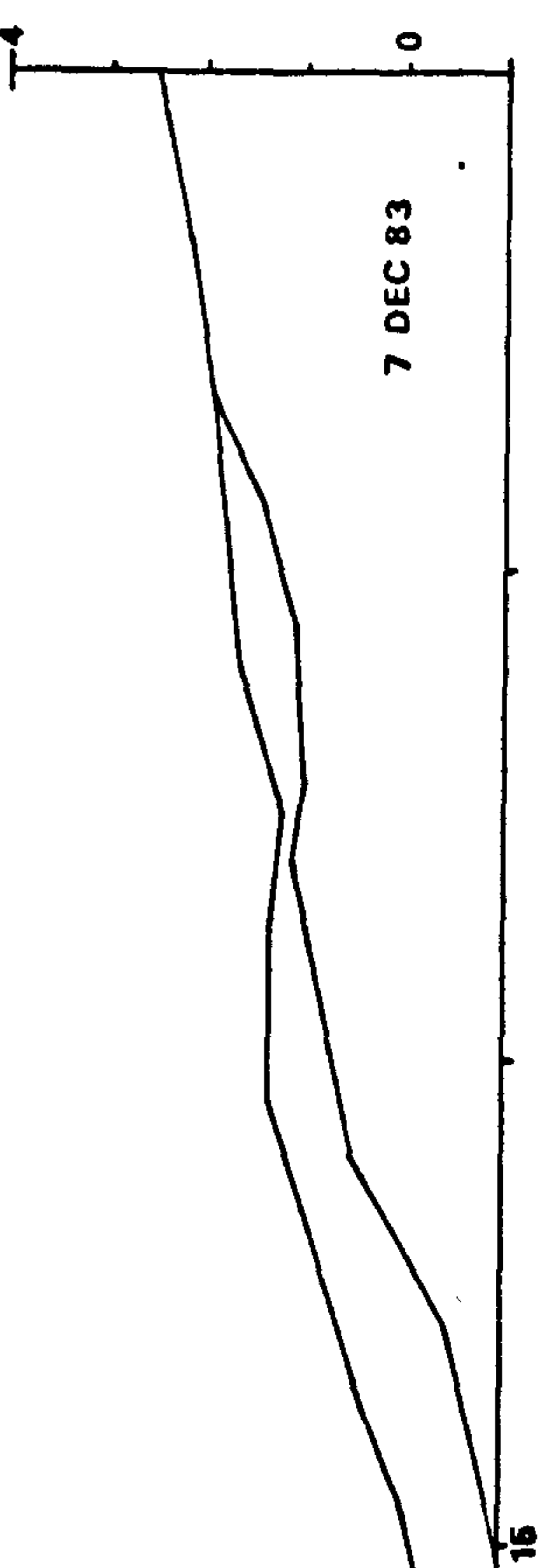
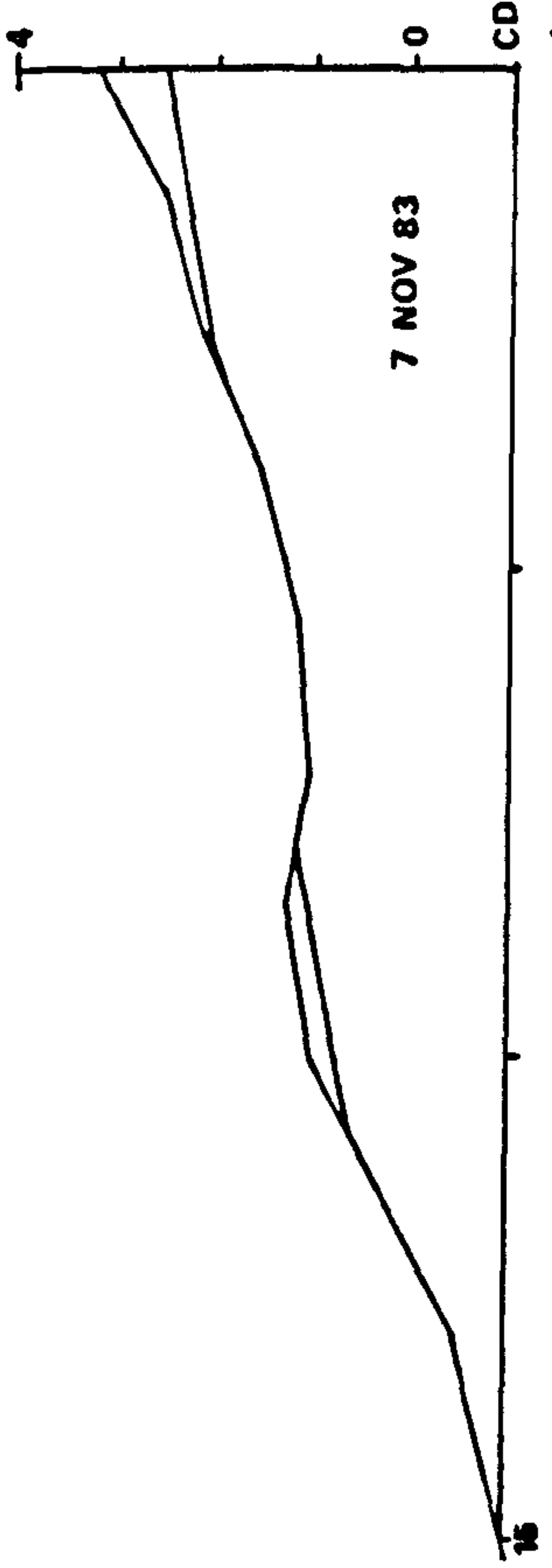


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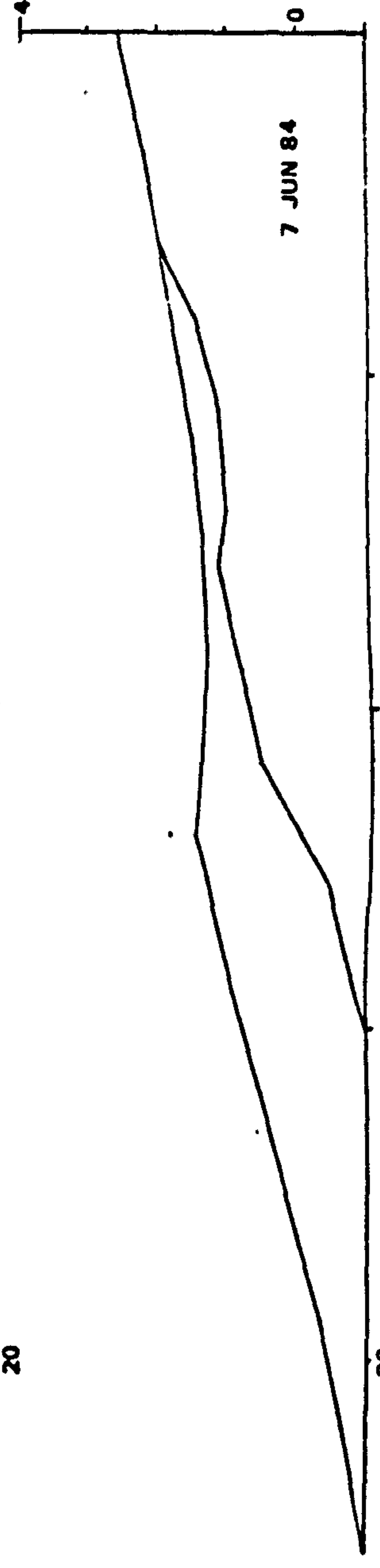
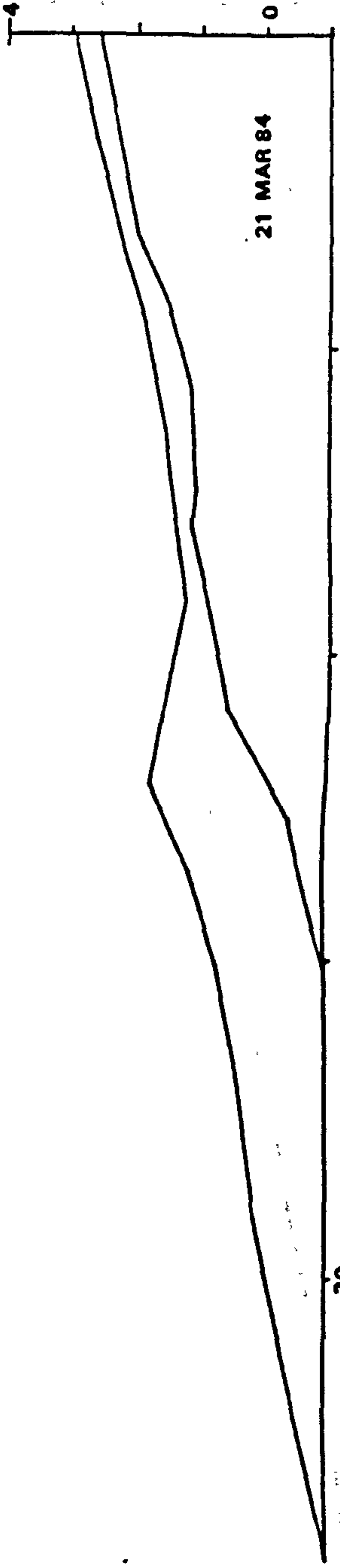
# MAN O WAR PROFILE 2

Figures in Metres  
CD = Chart Datum



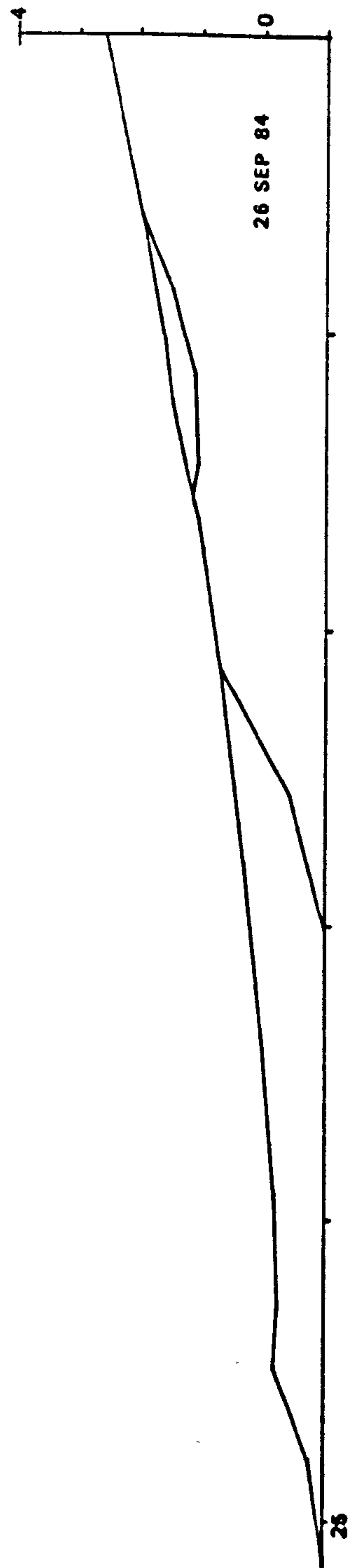
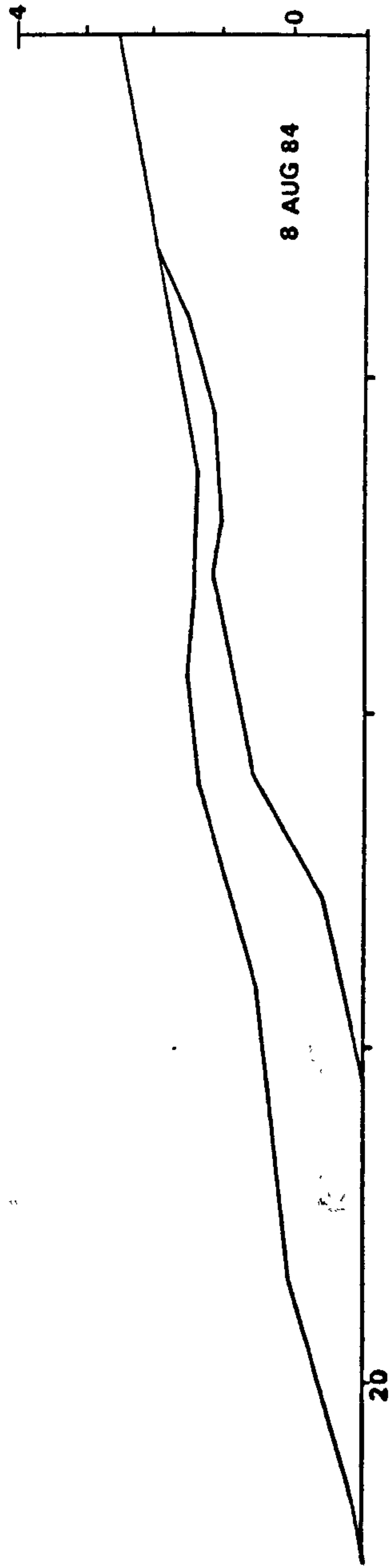
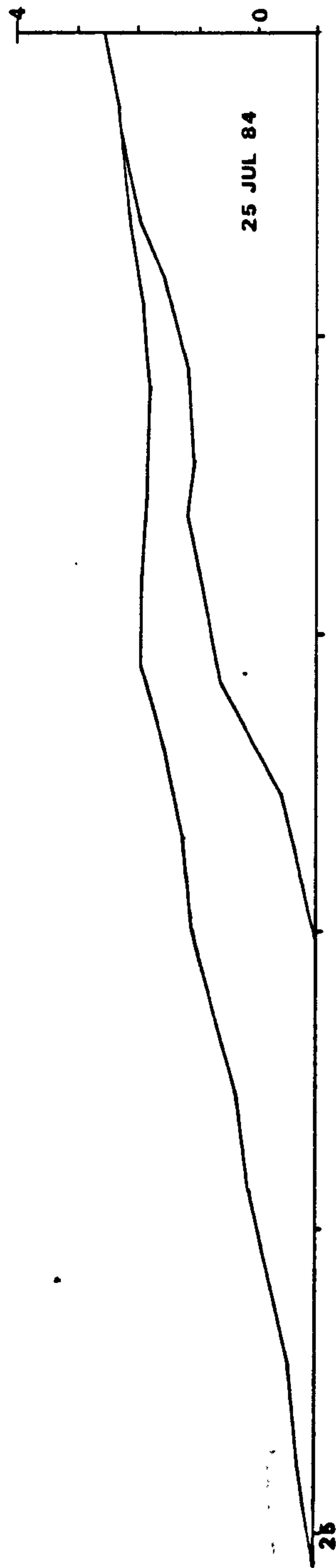






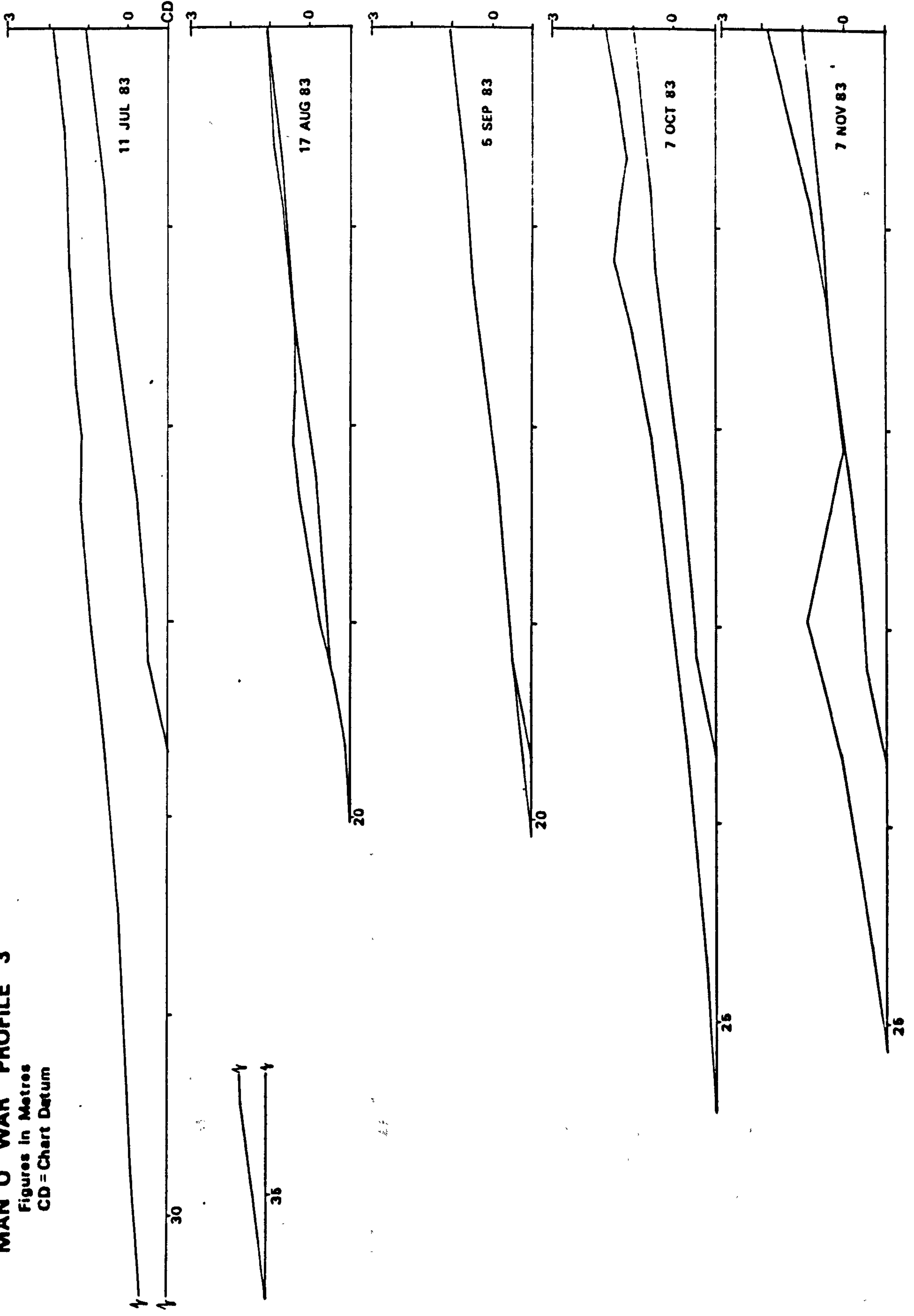
WIND PROFILE PLOT

WIND SPEED (MPH)

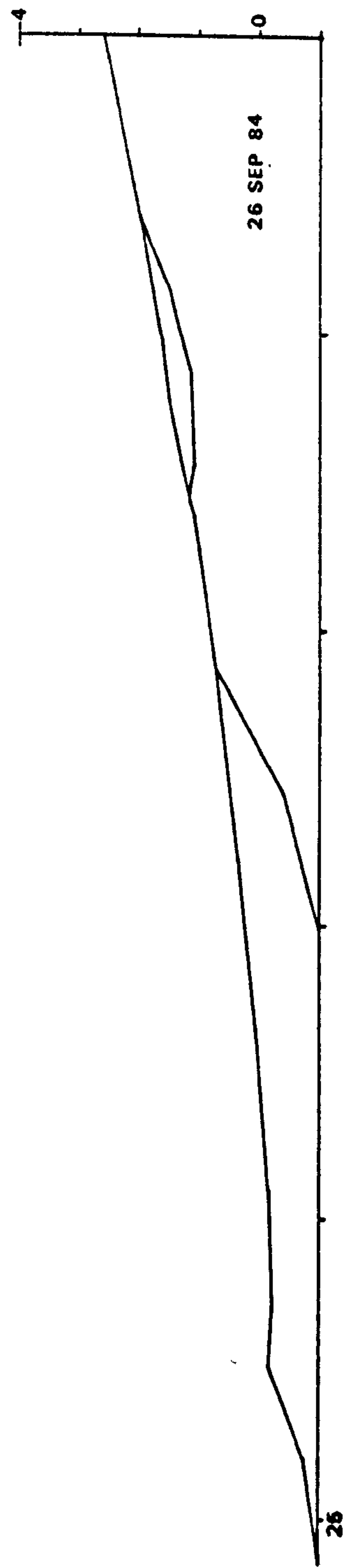
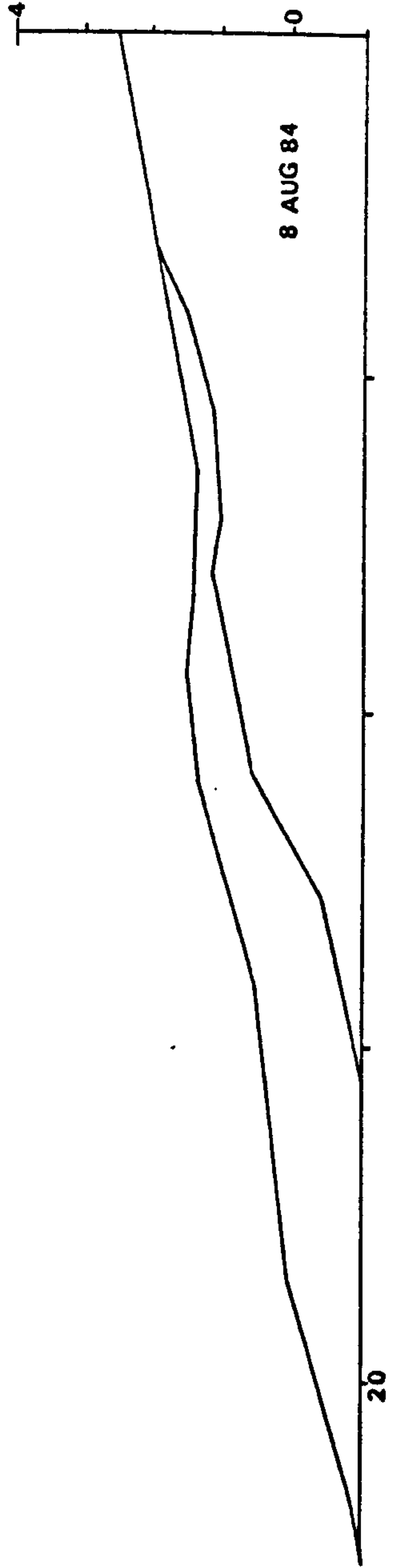
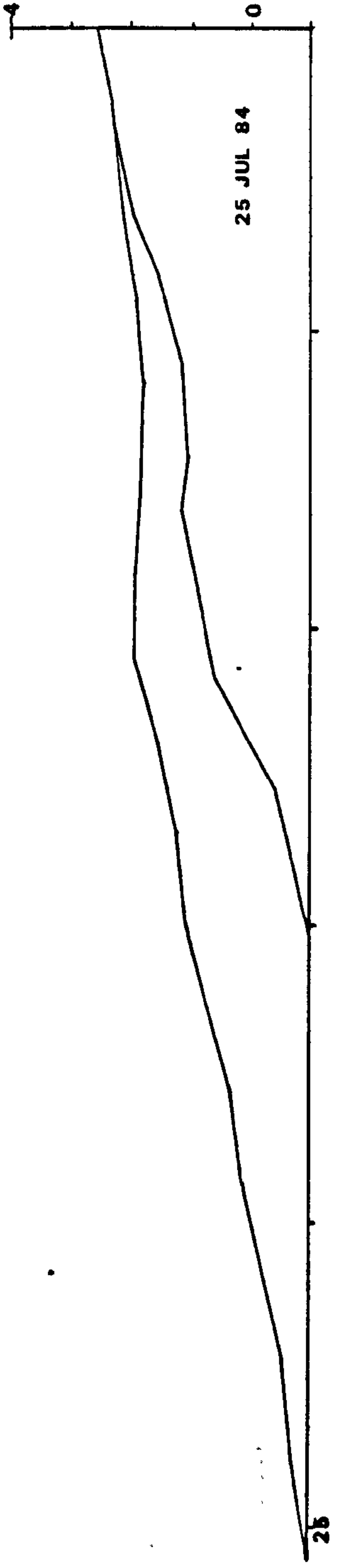


# MAN O' WAR PROFILE 3

Figures in Metres  
CD = Chart Datum

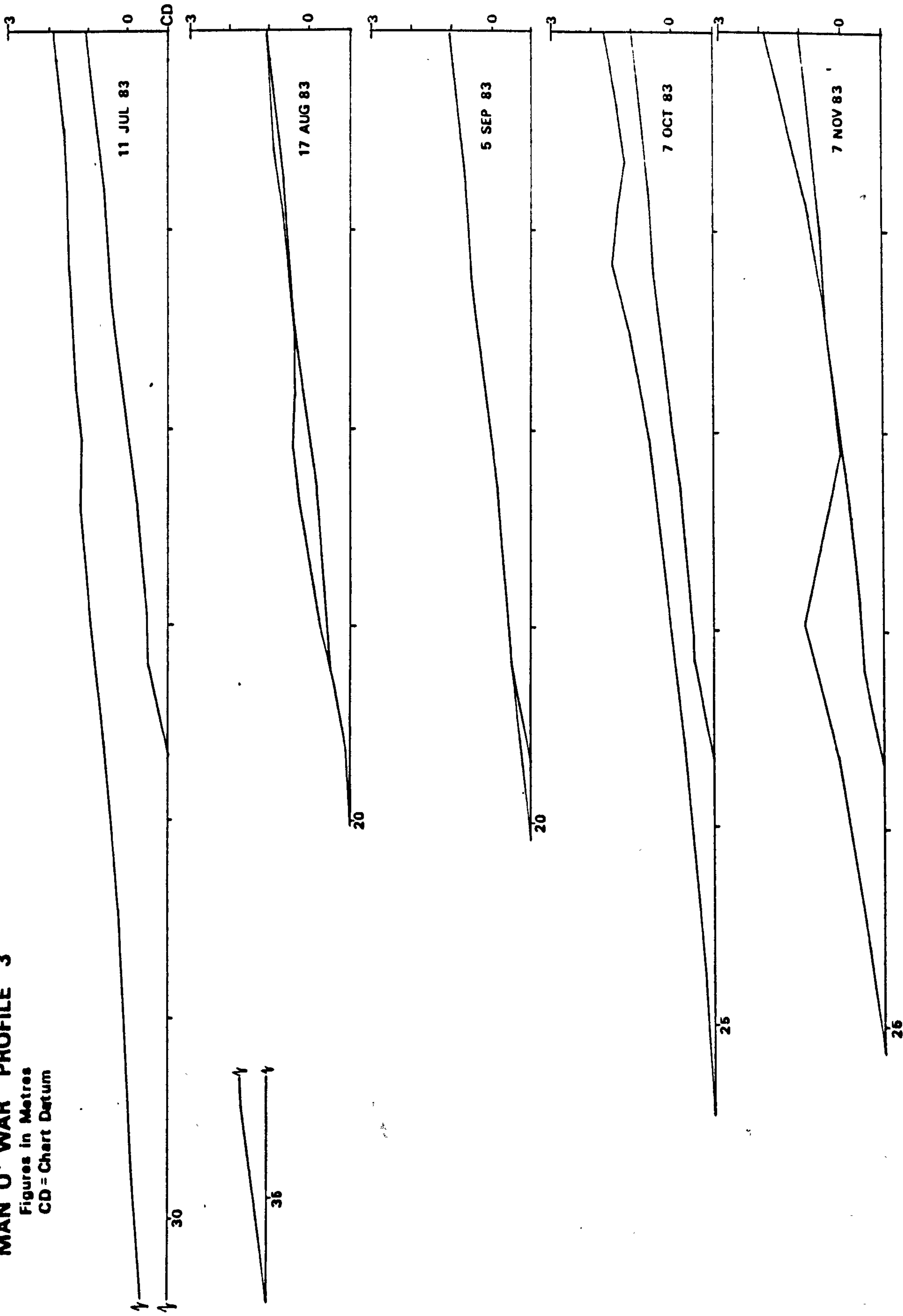


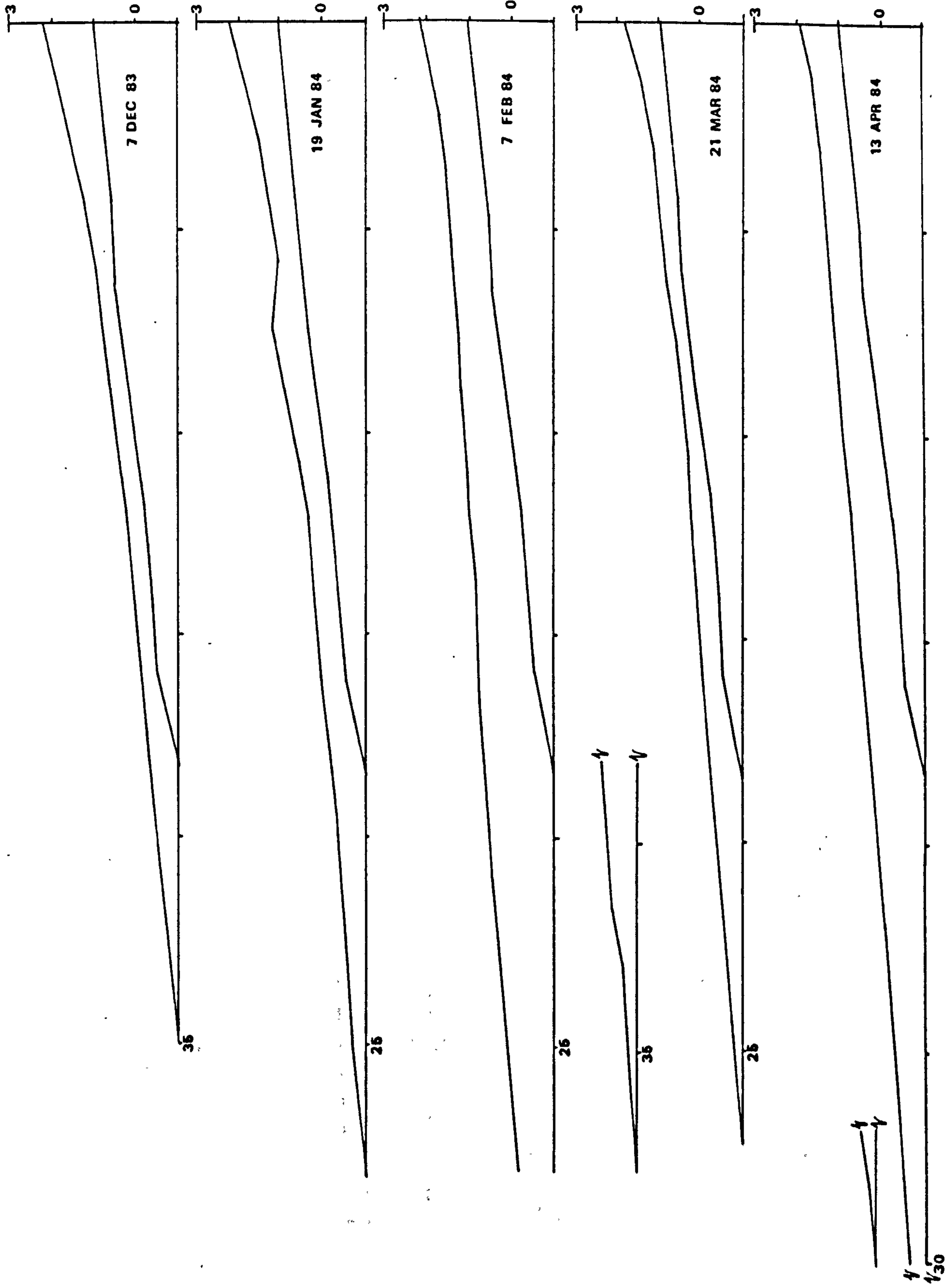
25 JUL 84  
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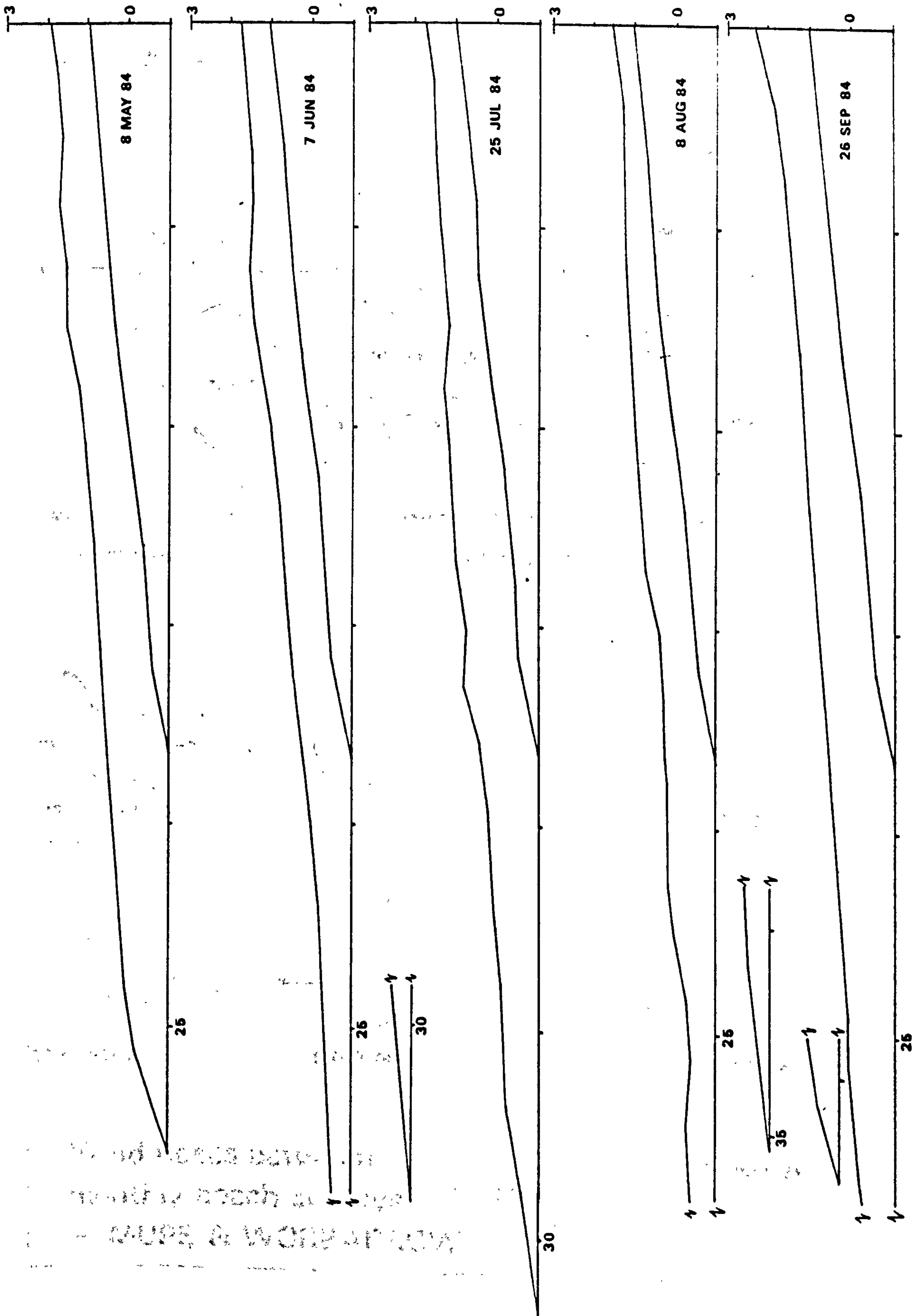


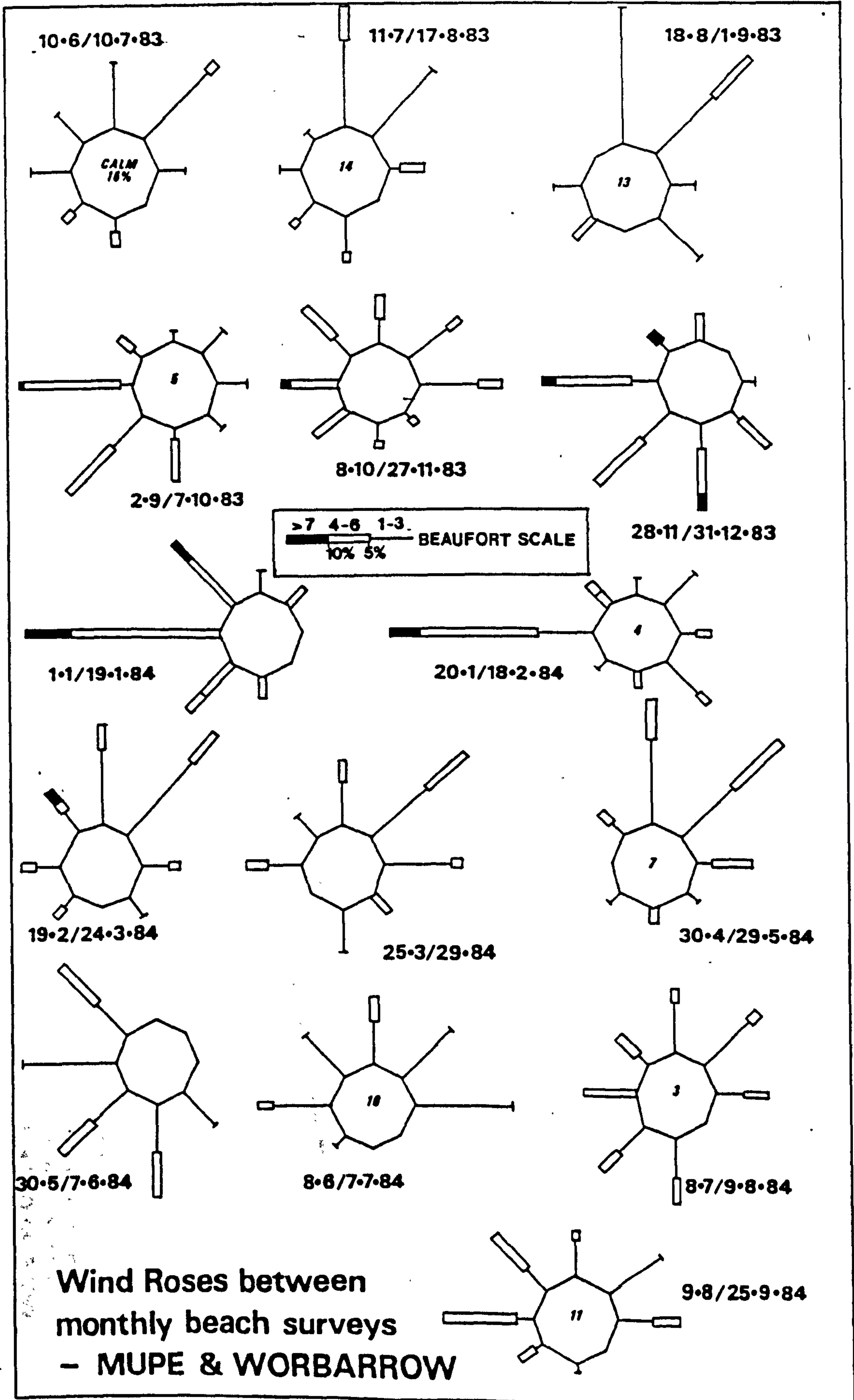
# MAN O' WAR PROFILE 3

Figures in Metres  
CD = Chart Datum



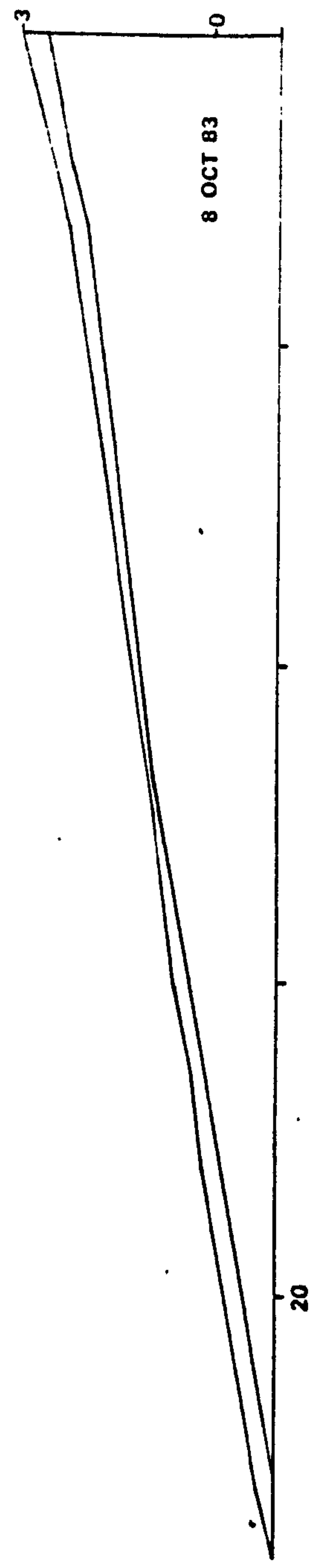
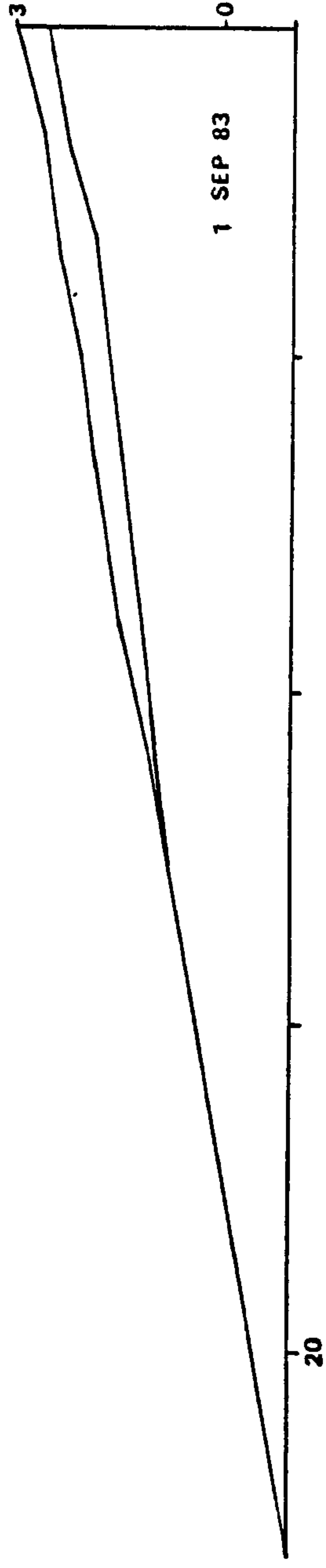
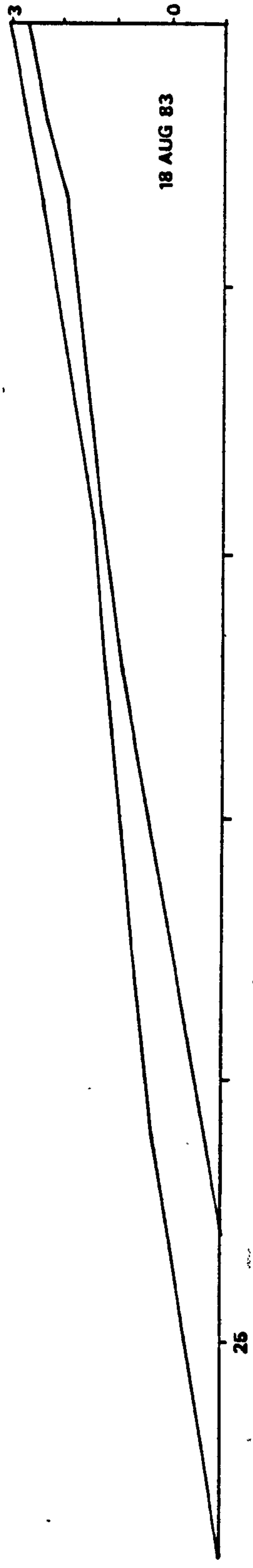
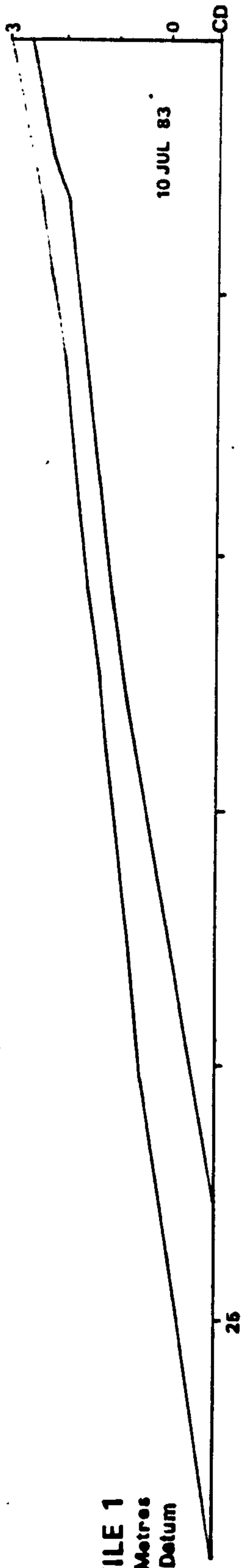


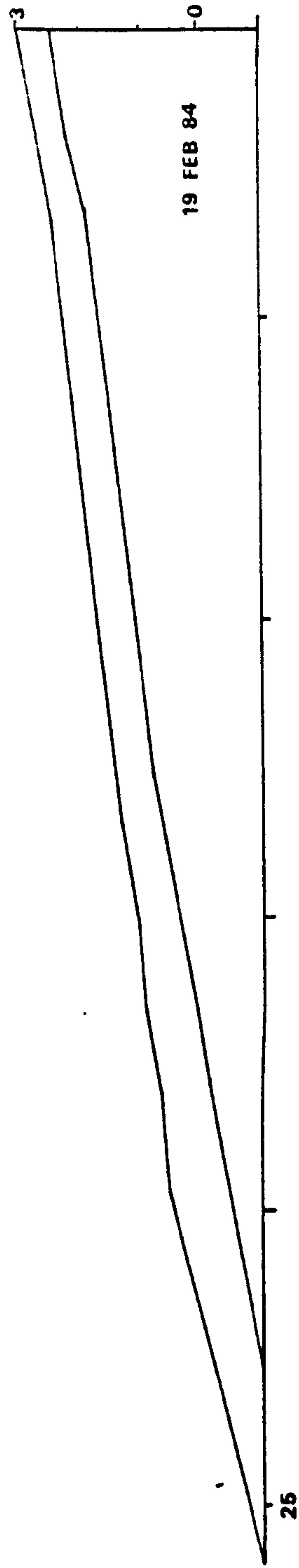
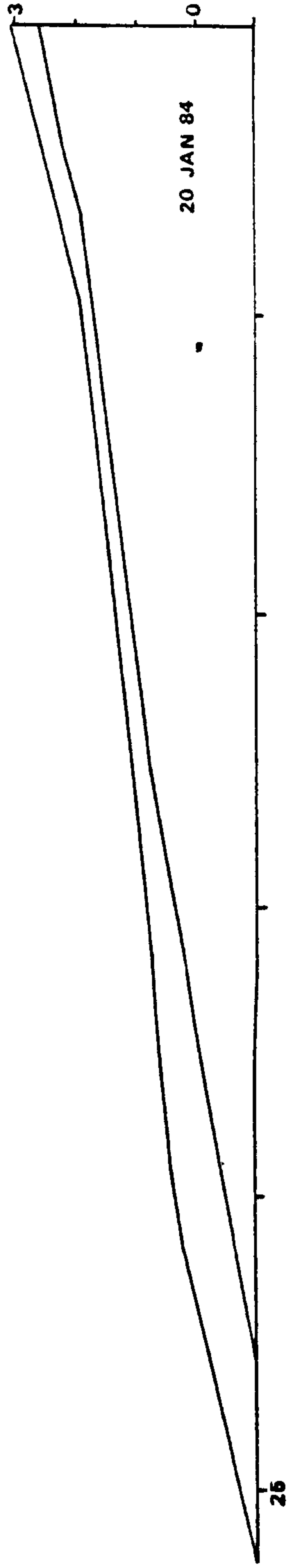
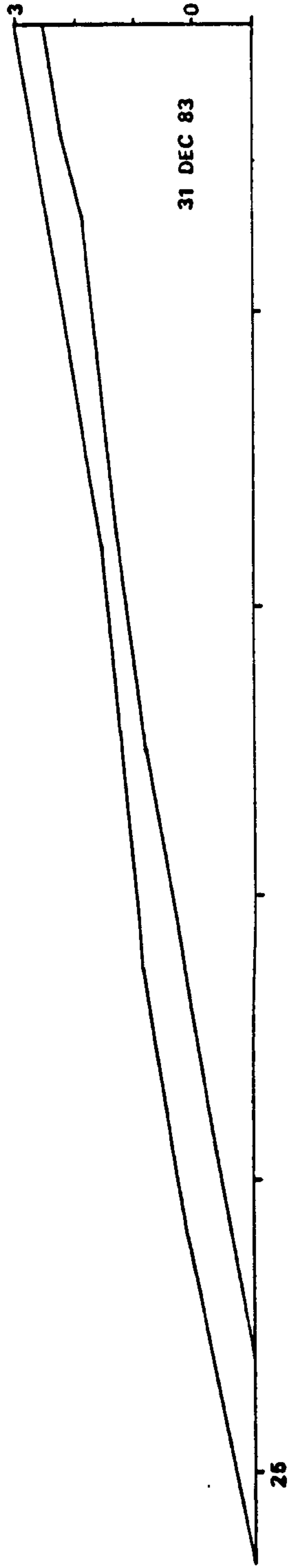
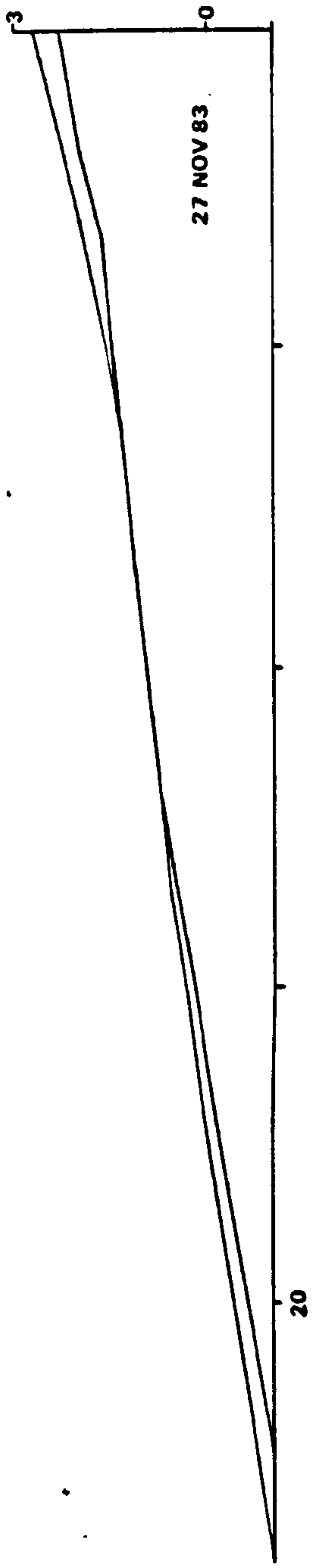






**MUPE PROFILE 1**  
Figures in Metres  
CD : Chart Datum





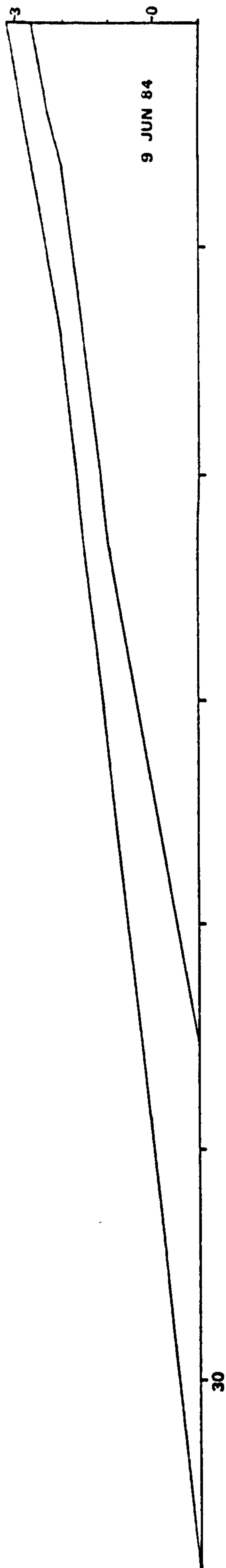
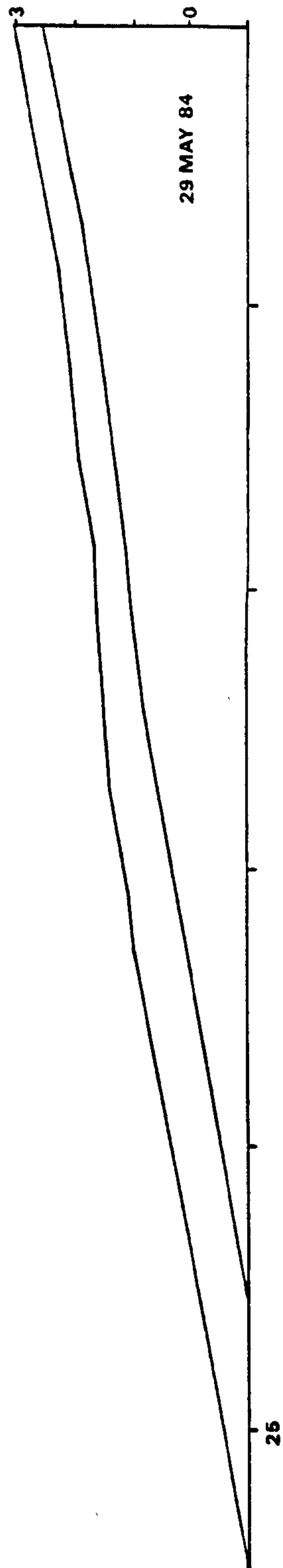
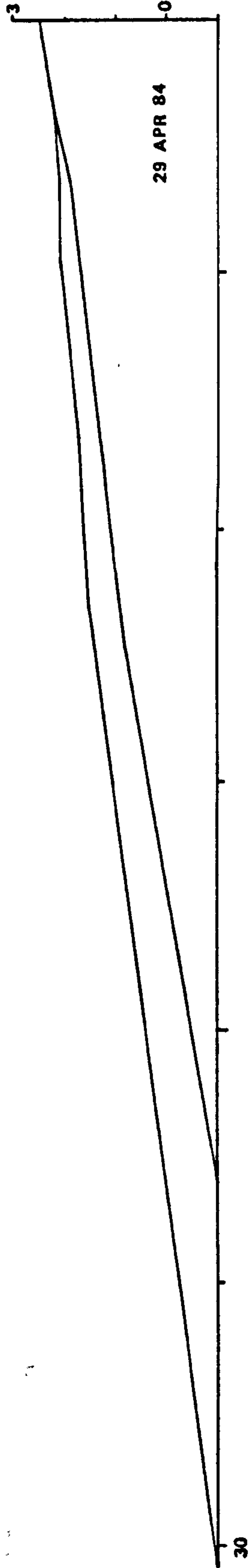
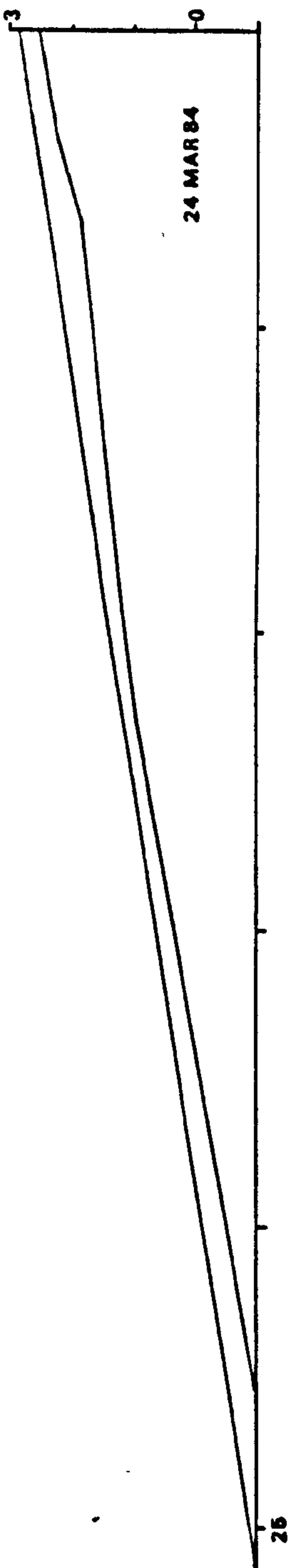
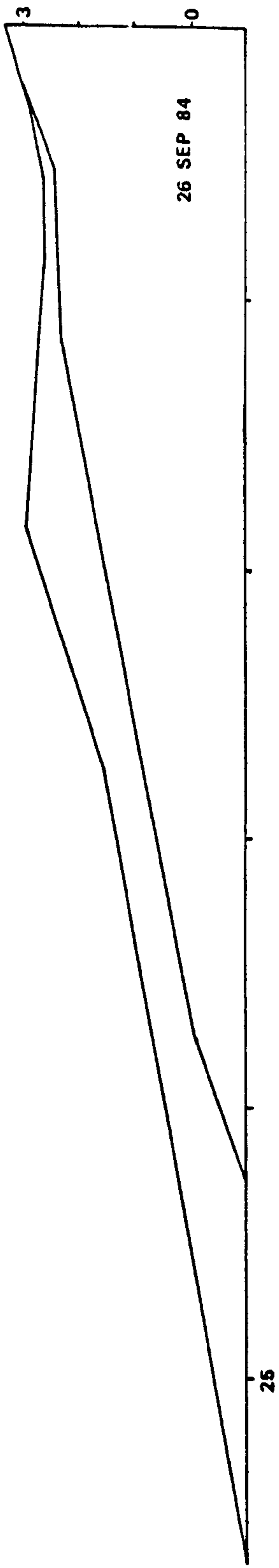
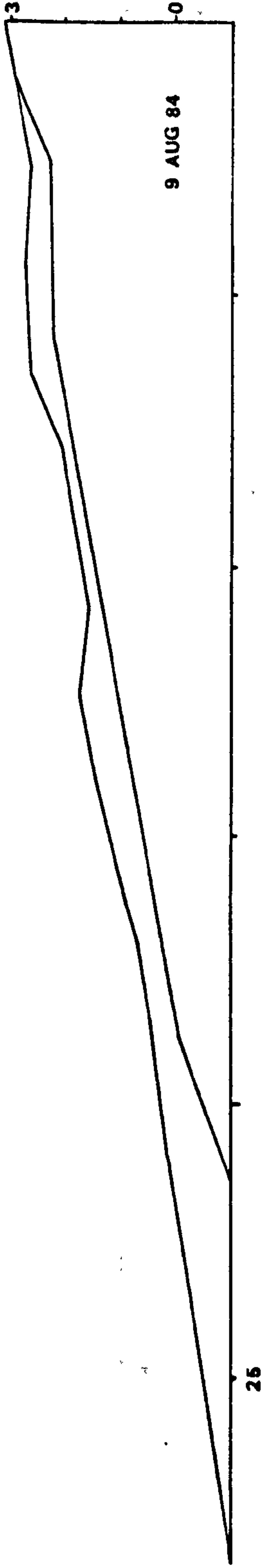
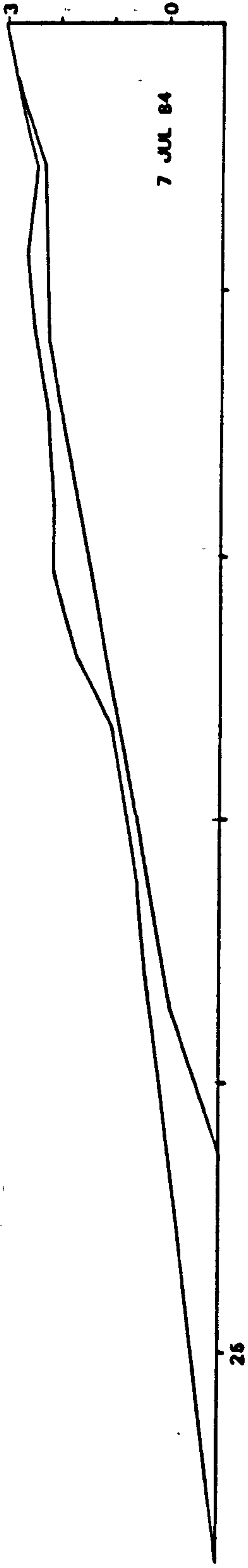
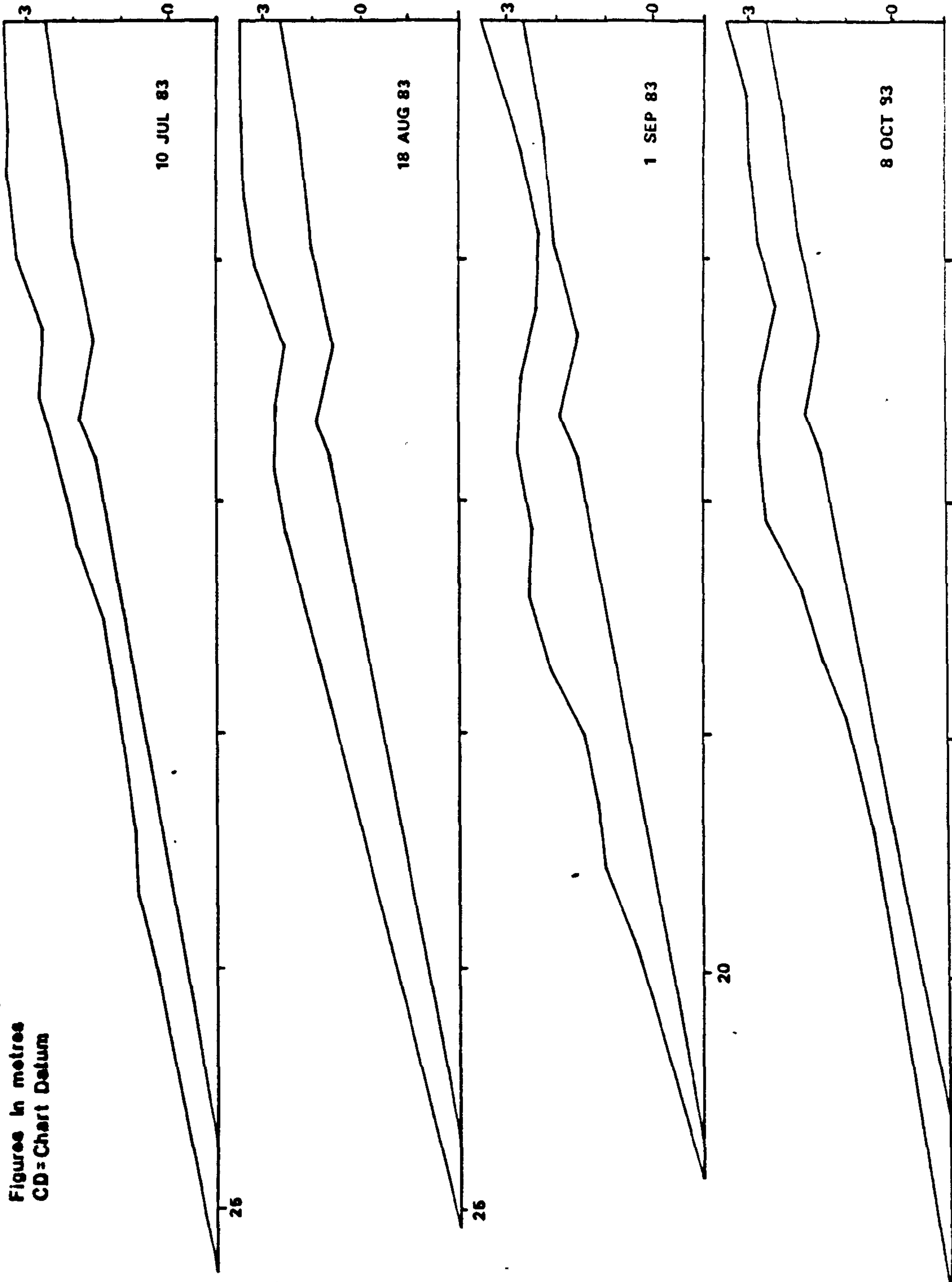


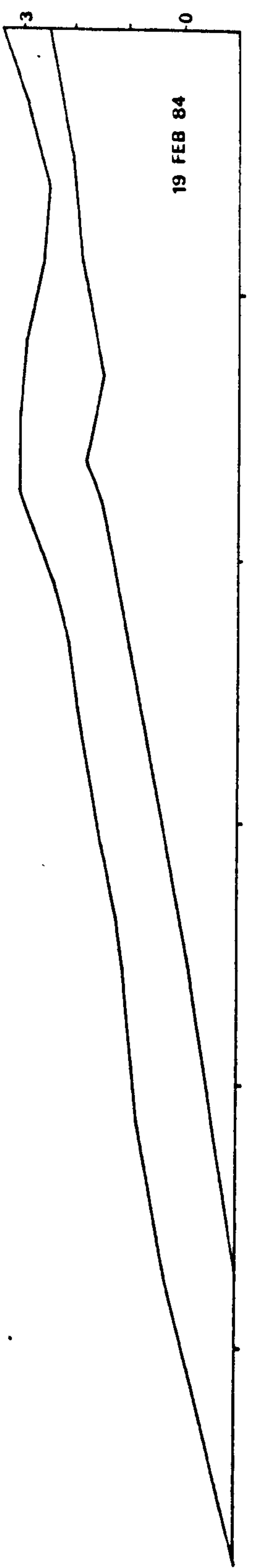
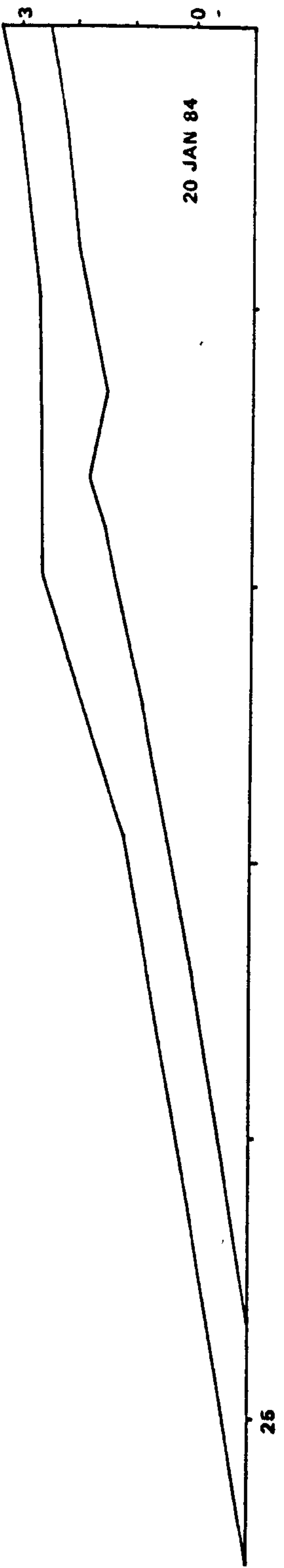
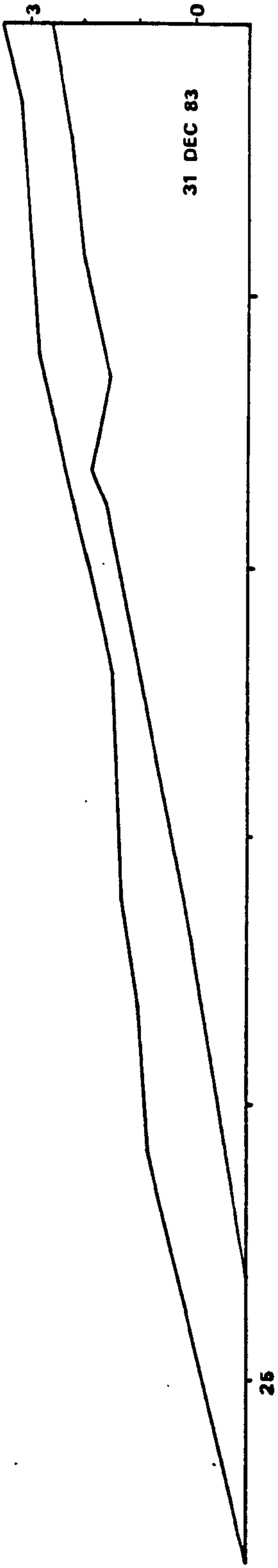
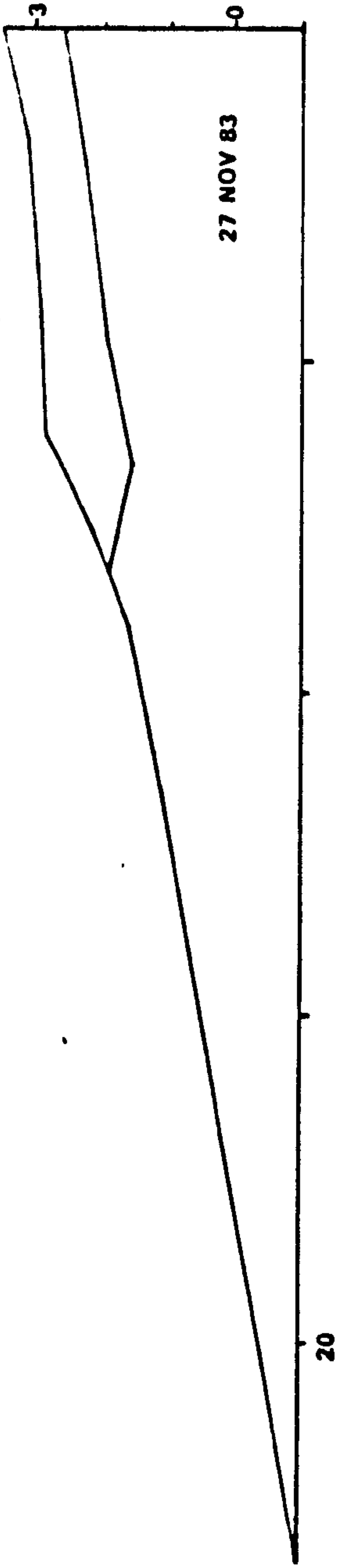
PLATE NUMBER 7

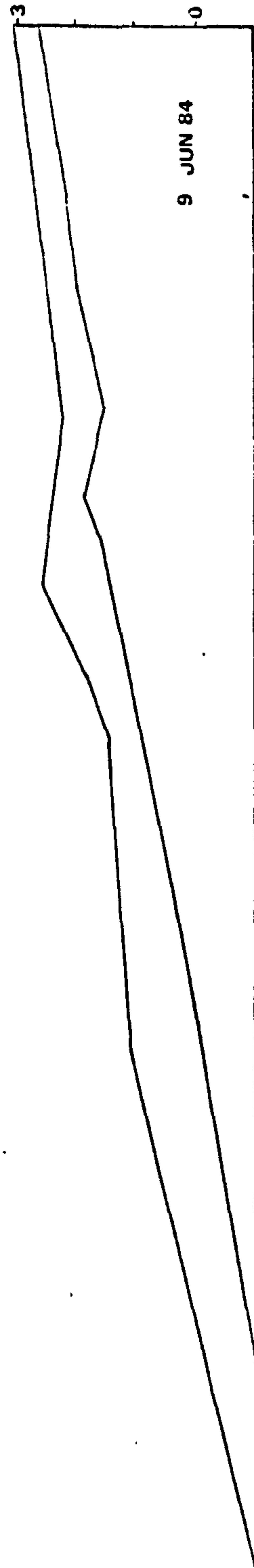
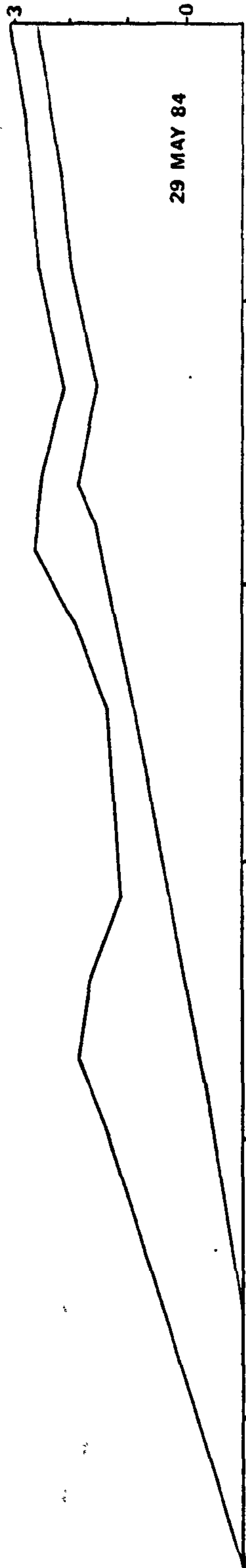
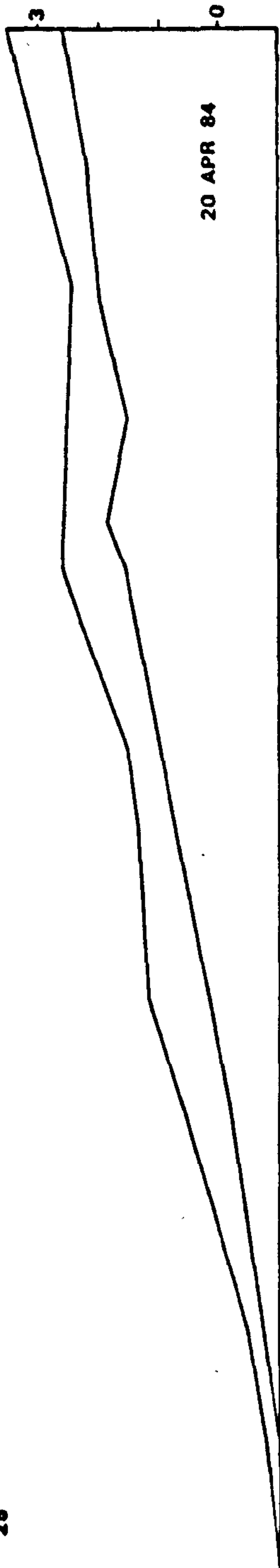
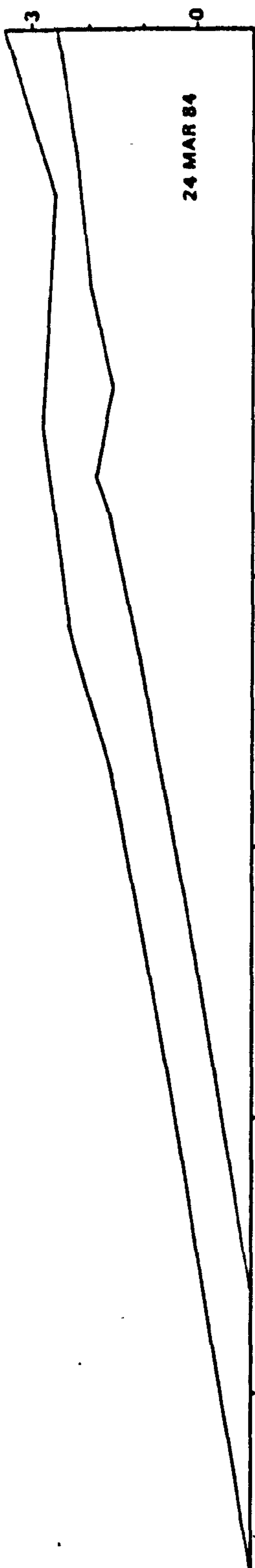


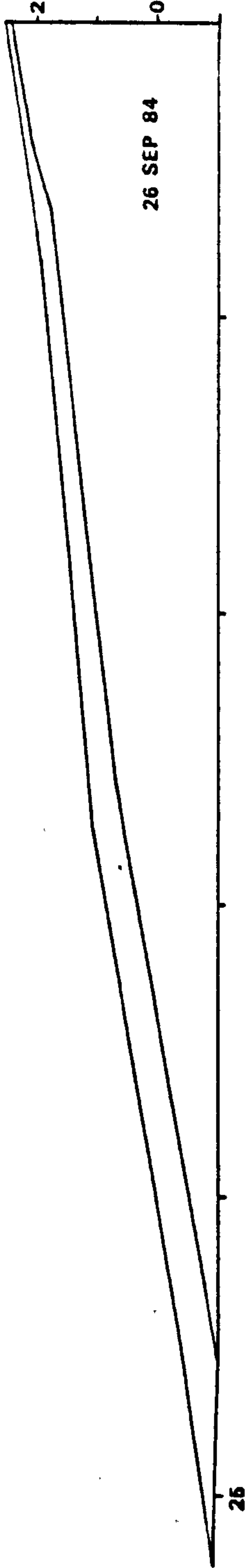
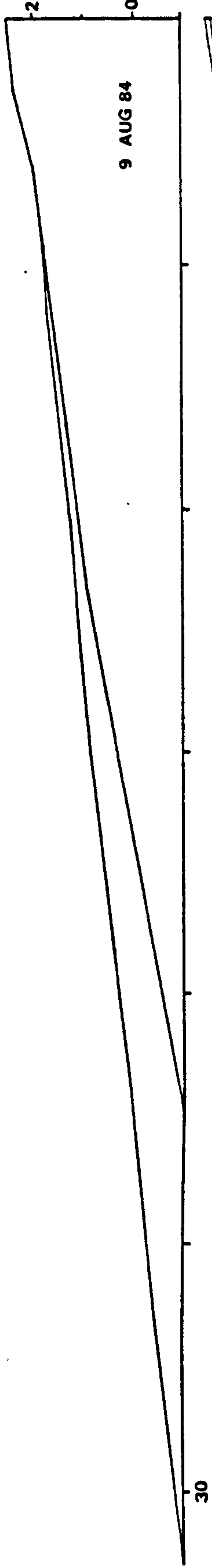
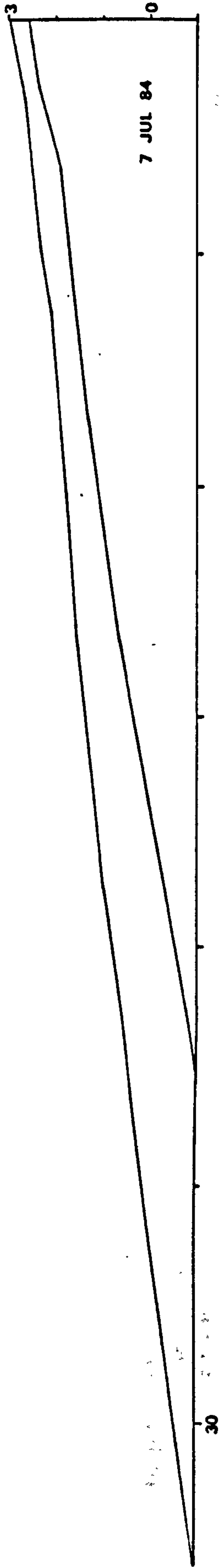
# MUPE PROFILE 2

Figures in metres  
CD = Chart Datum



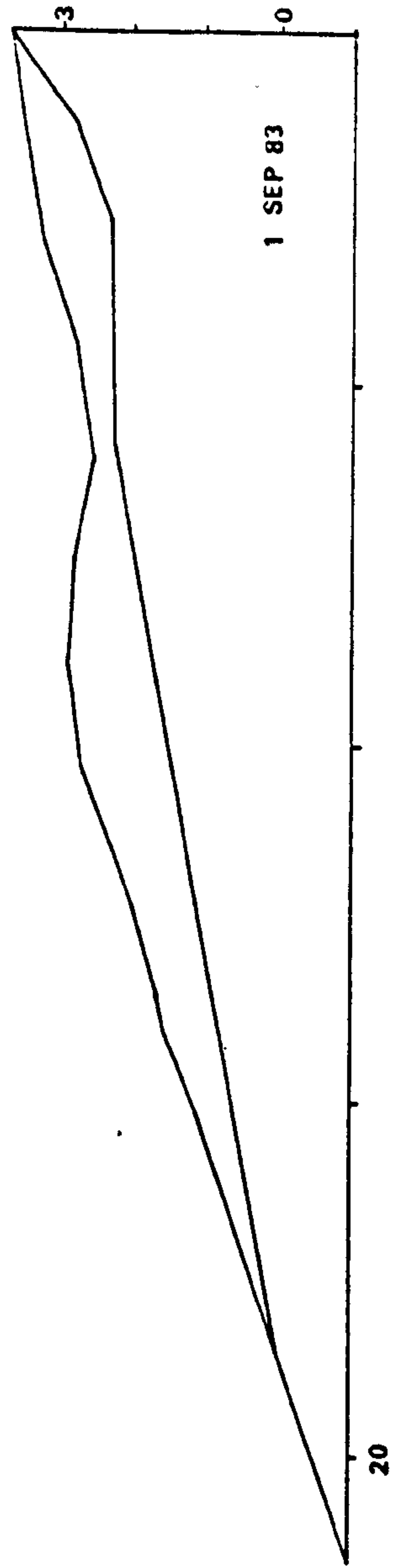
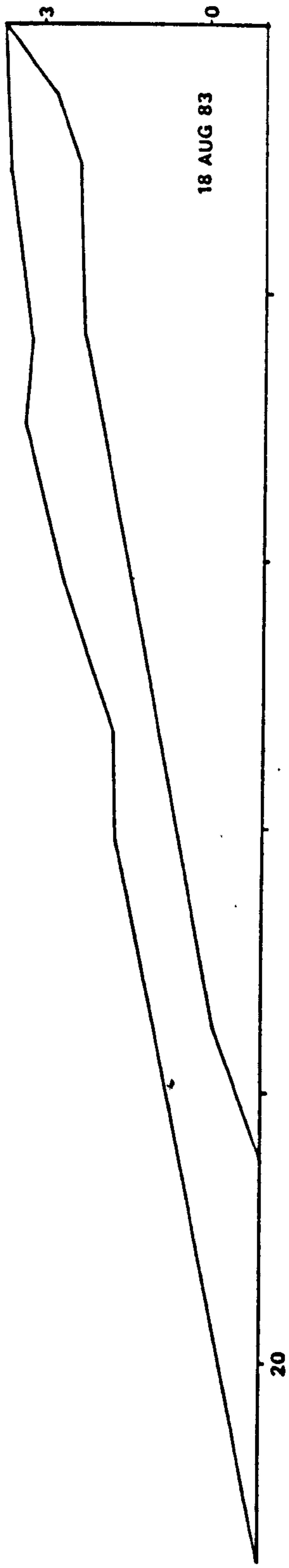
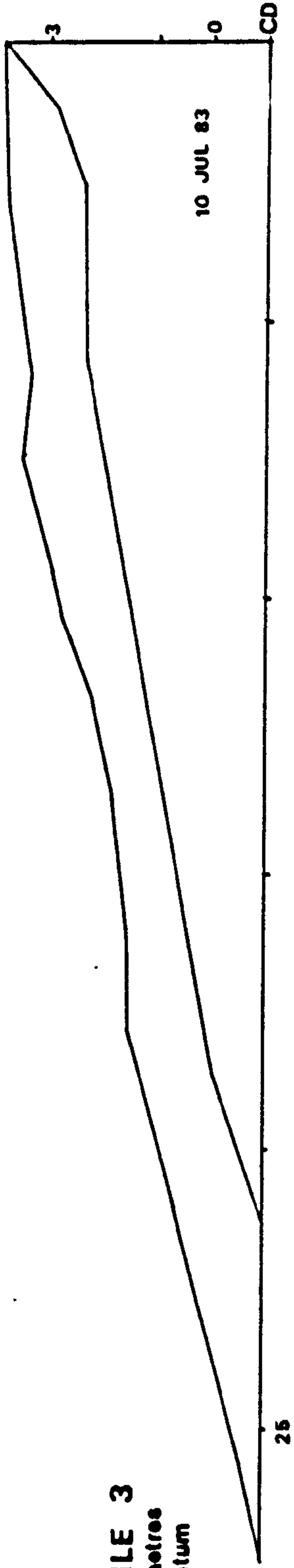


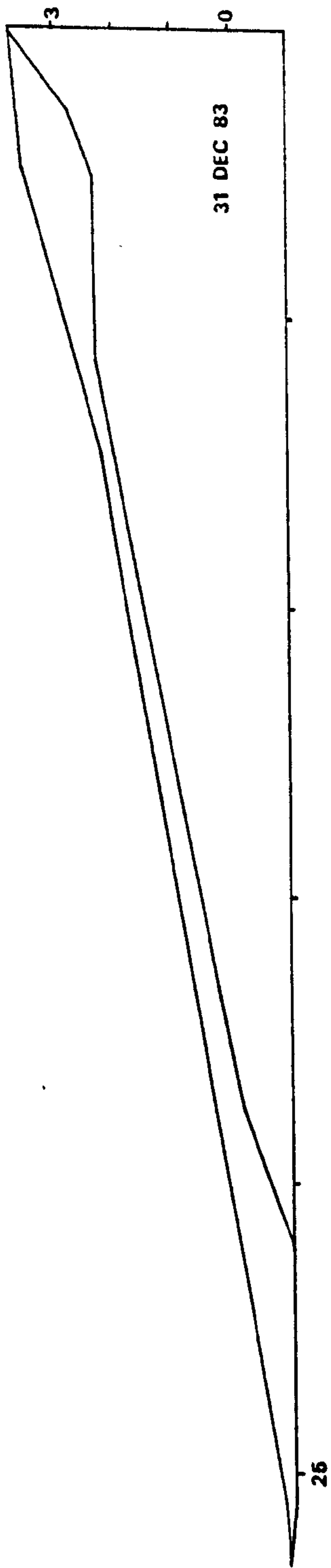
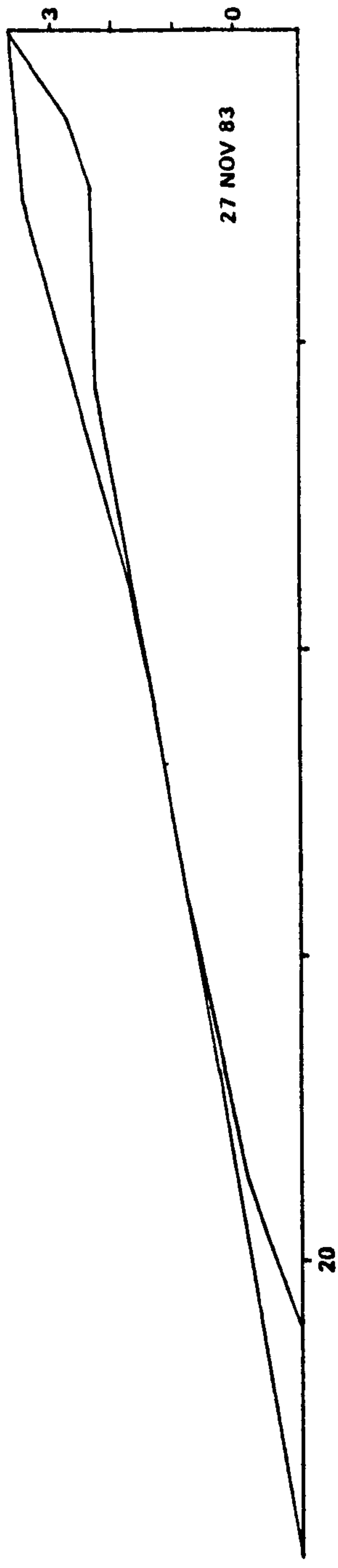
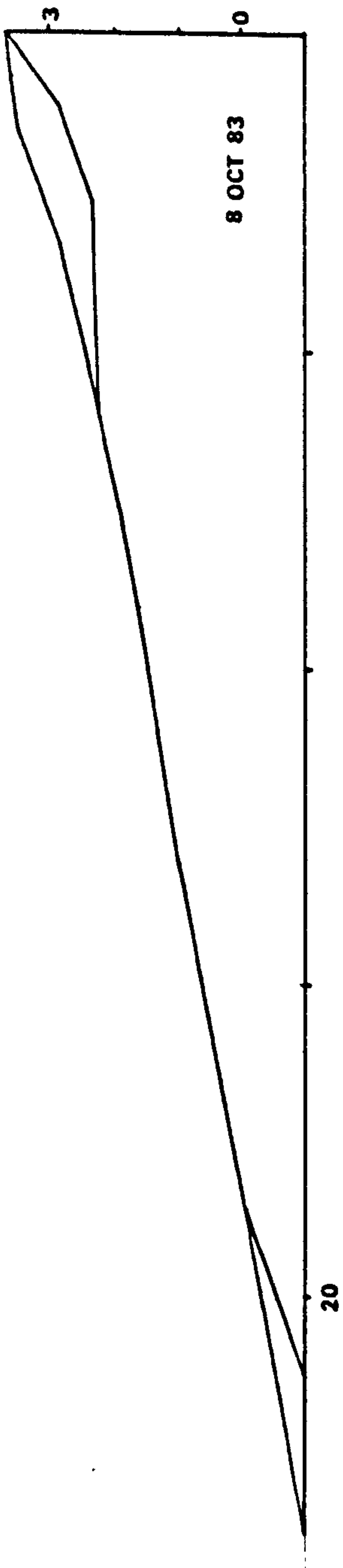


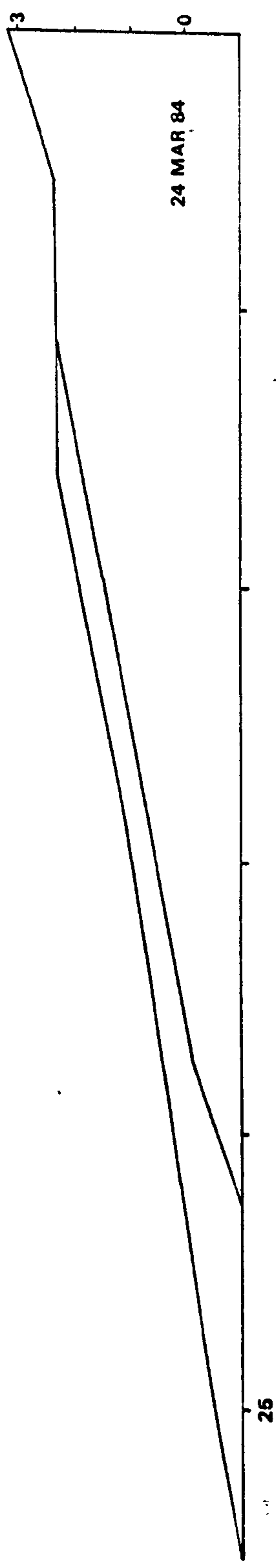
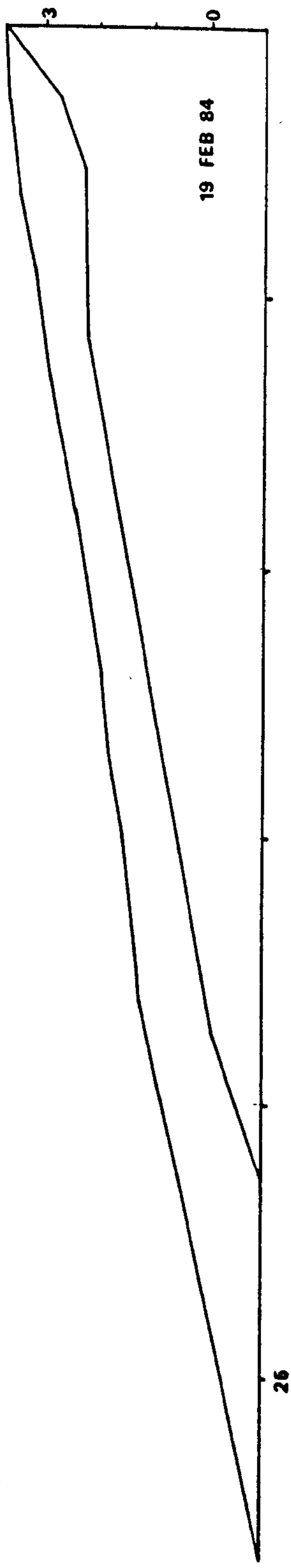
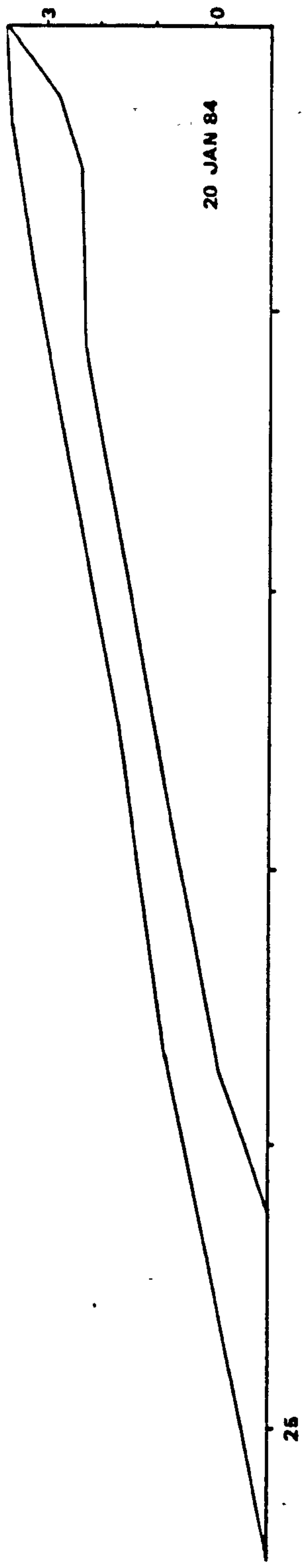


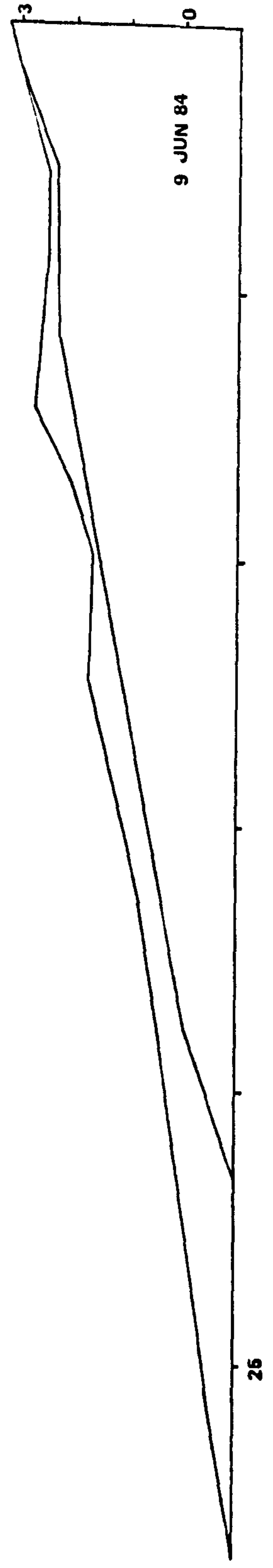
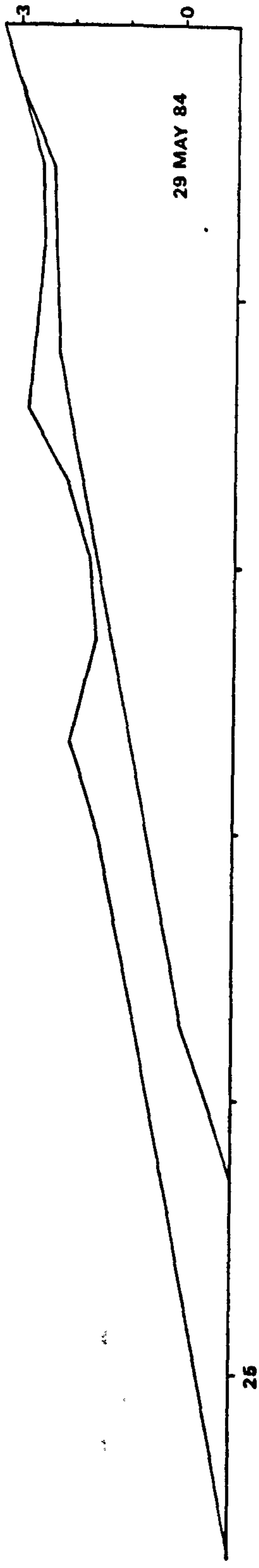
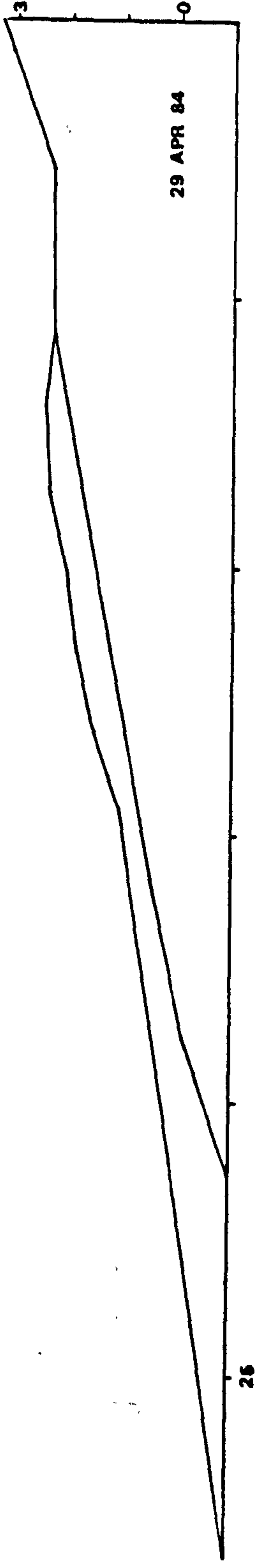


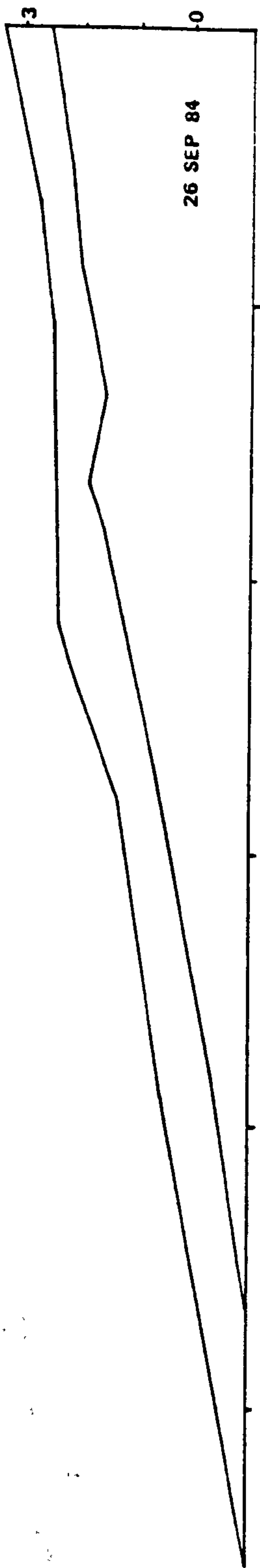
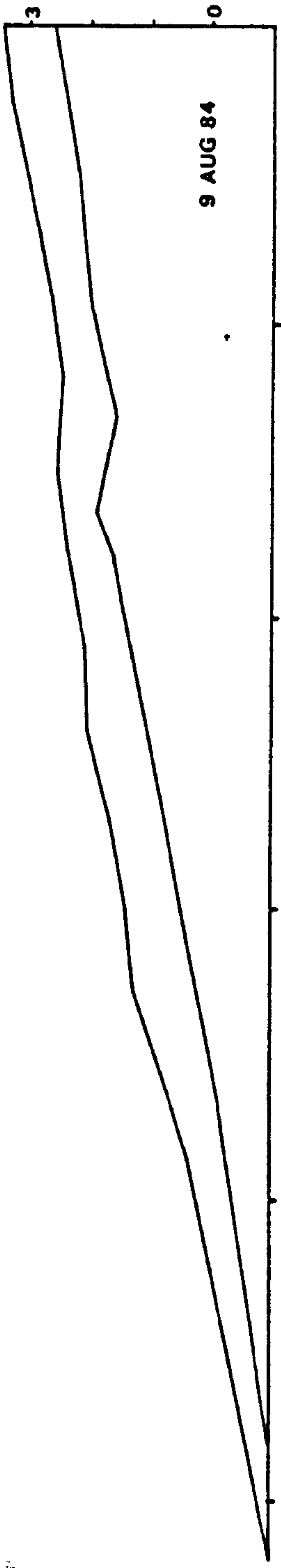
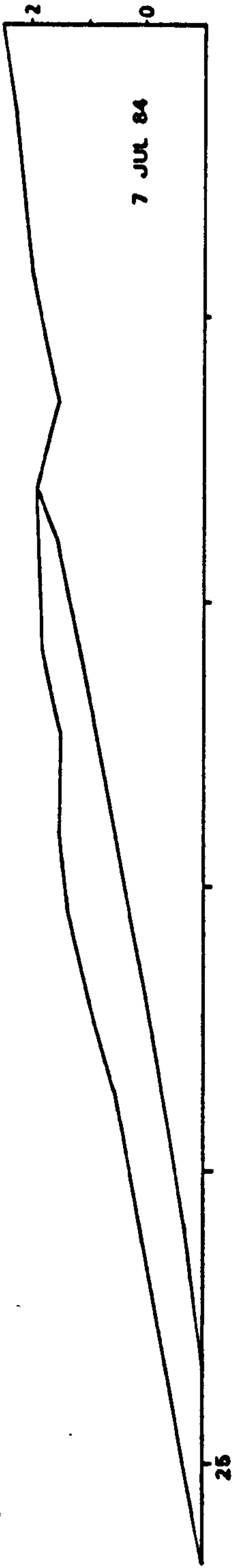
**MUPE PROFILE 3**  
Figures in metres  
CD = Chart Datum







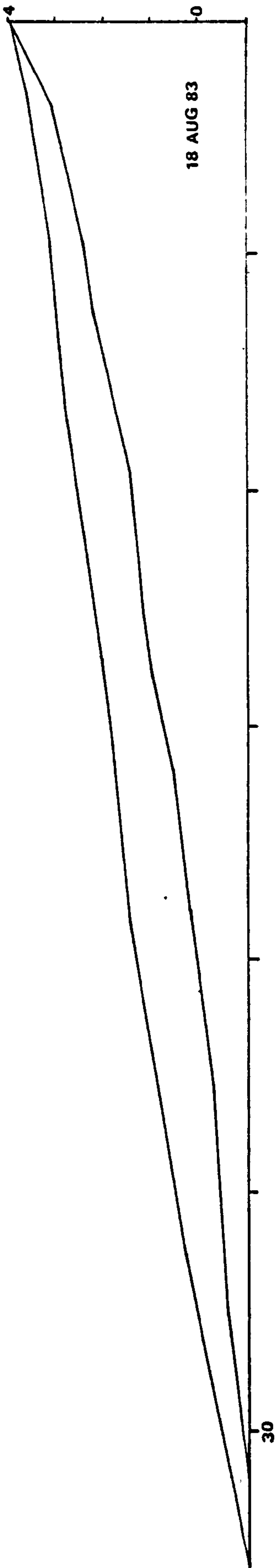
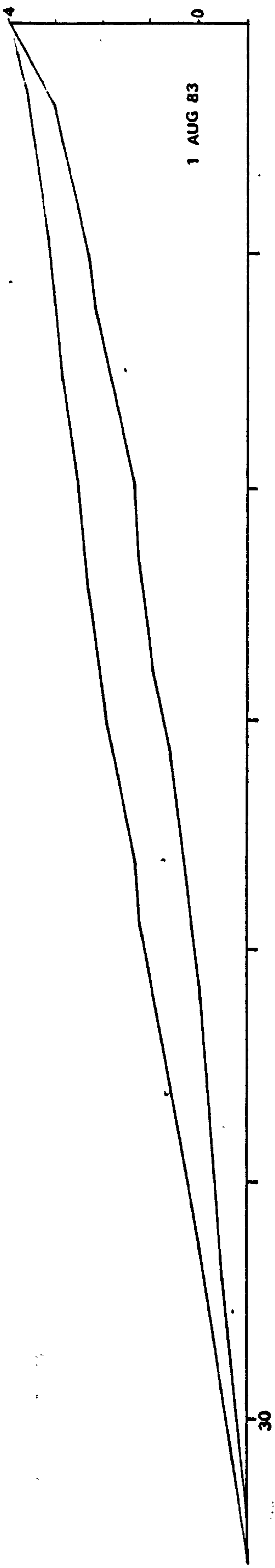
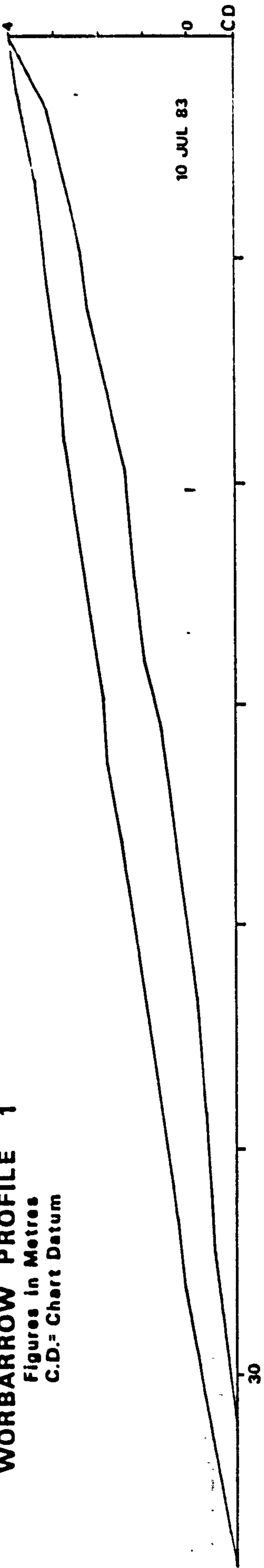


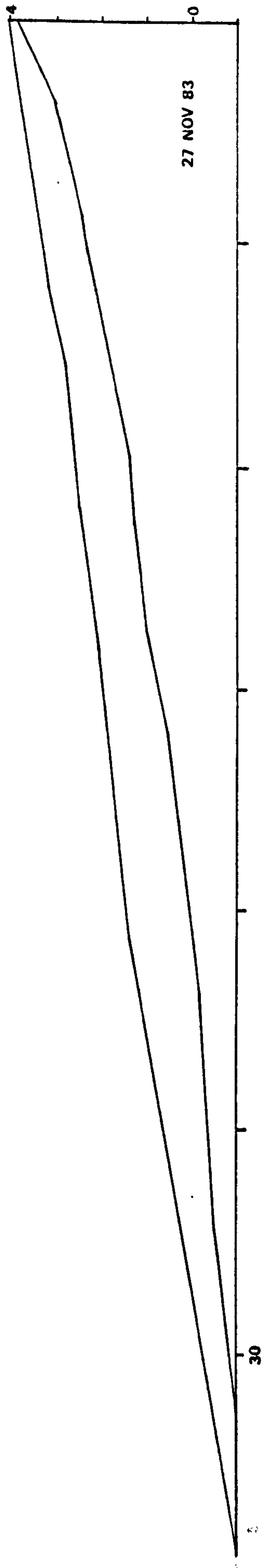
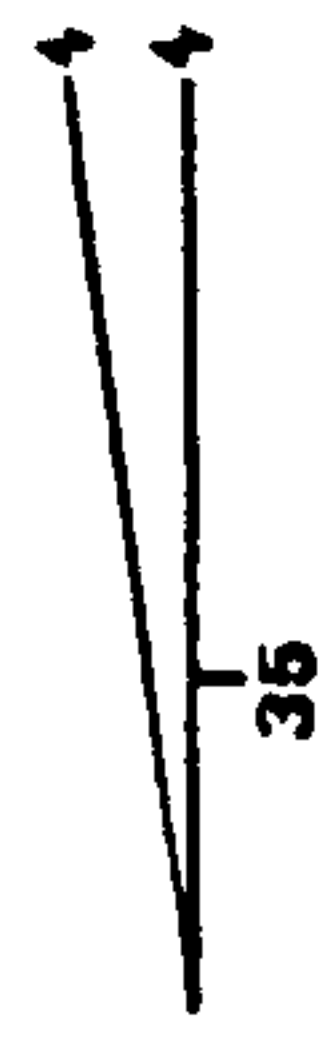
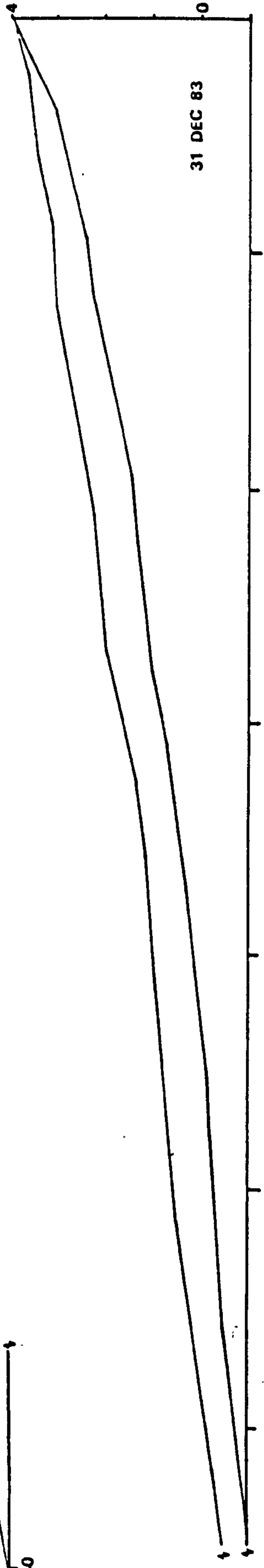
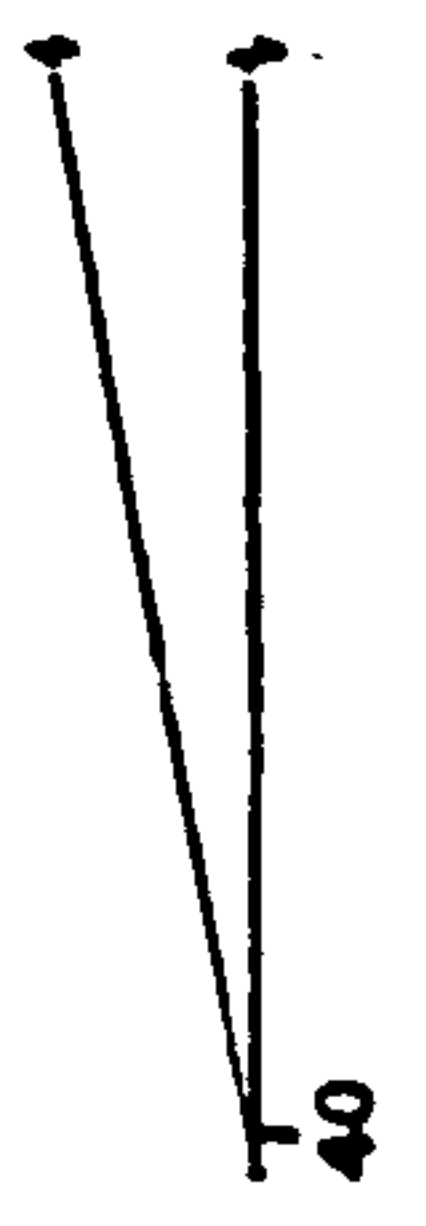
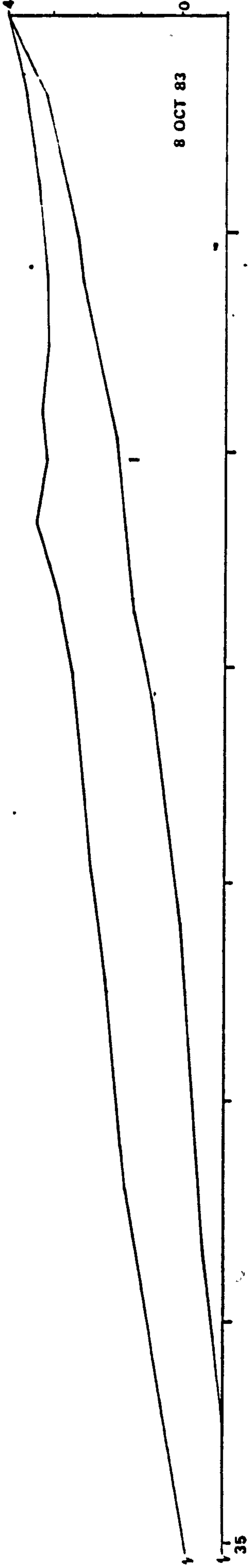


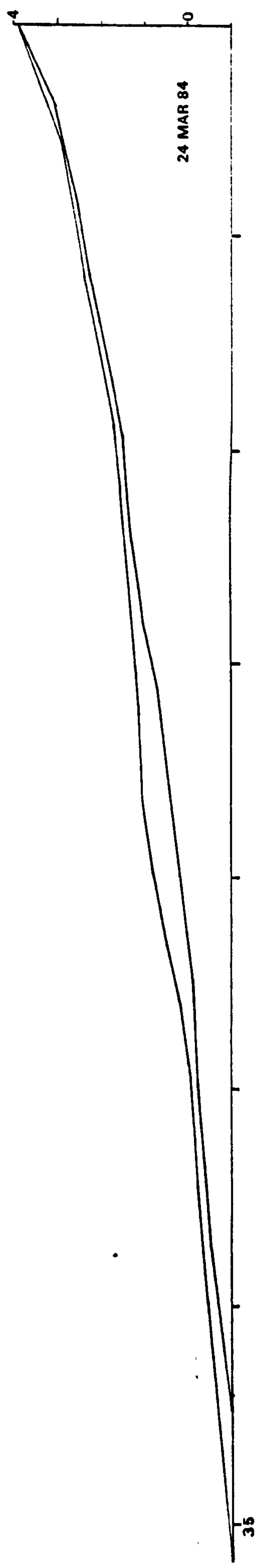
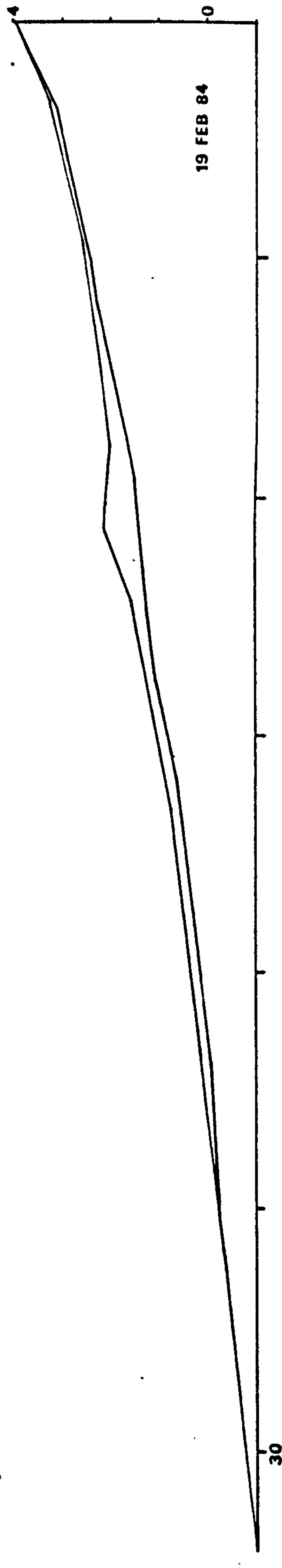
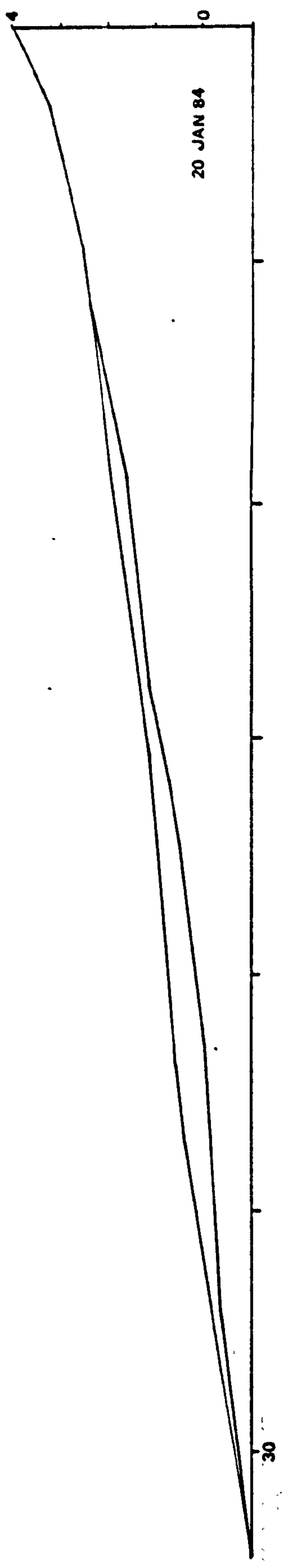
**WORBARROW PROFILE 1**

Figures in Metres

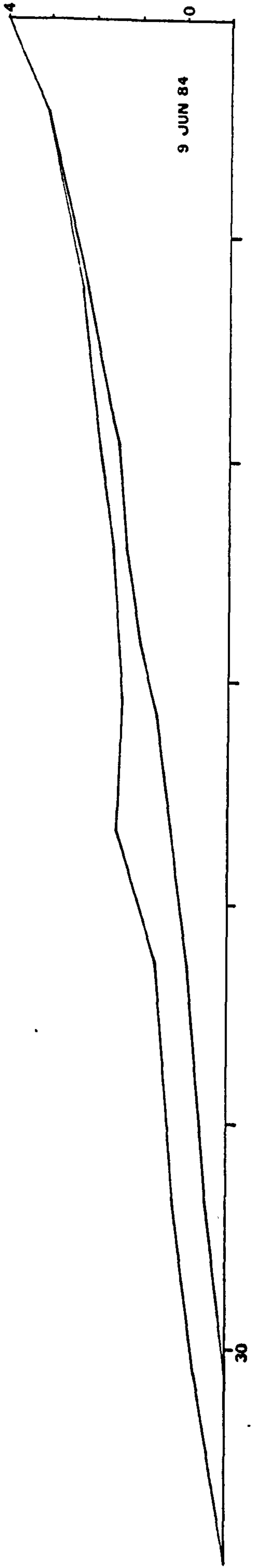
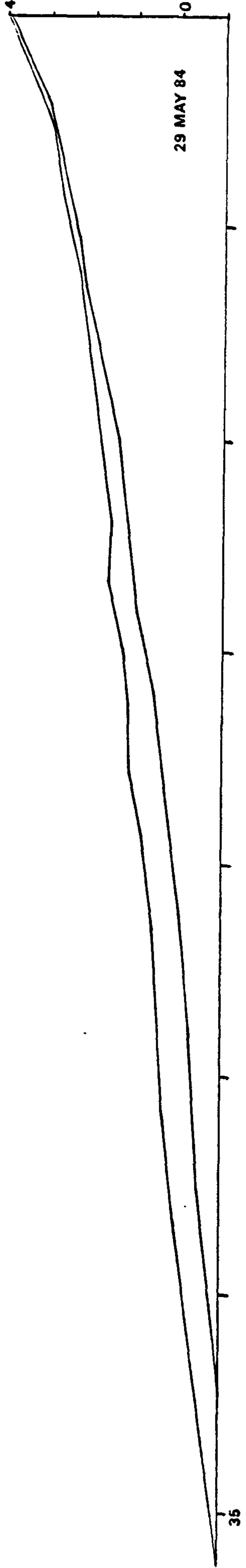
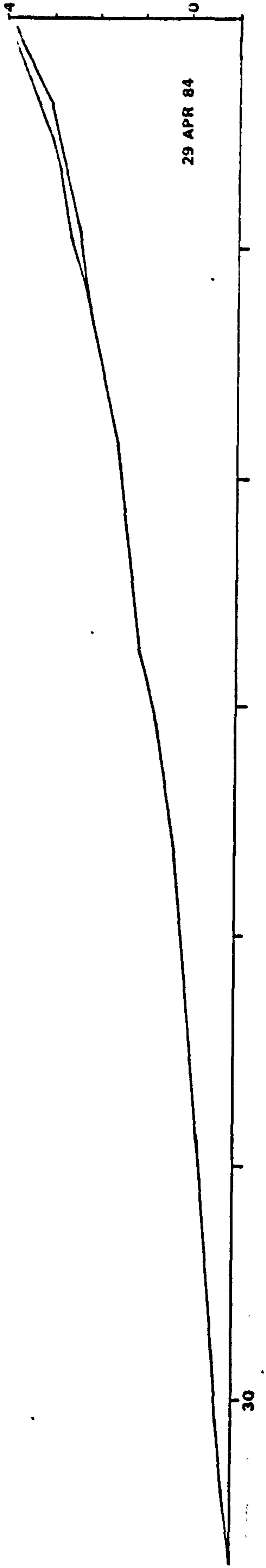
C.D.= Chart Datum

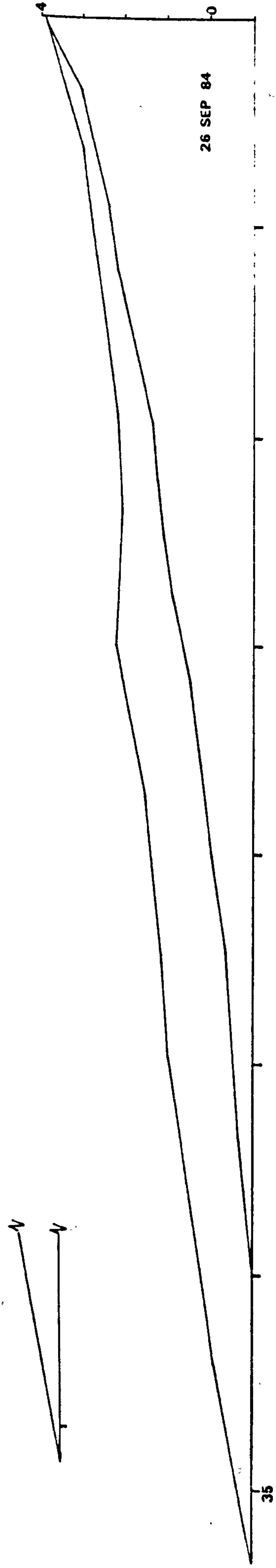
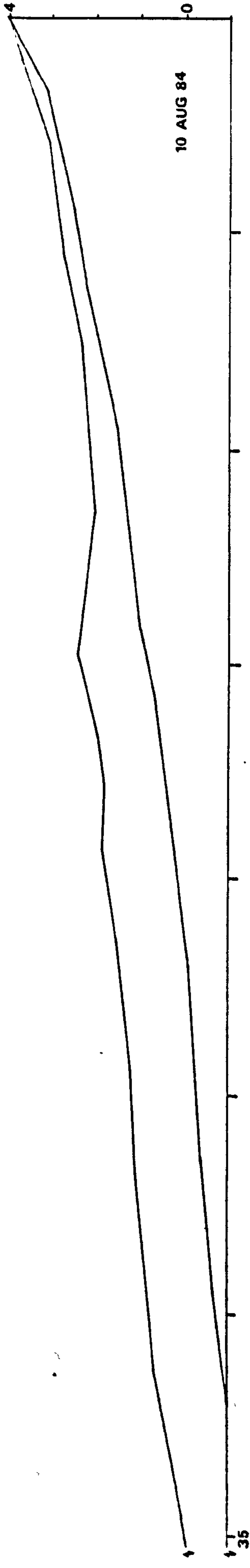
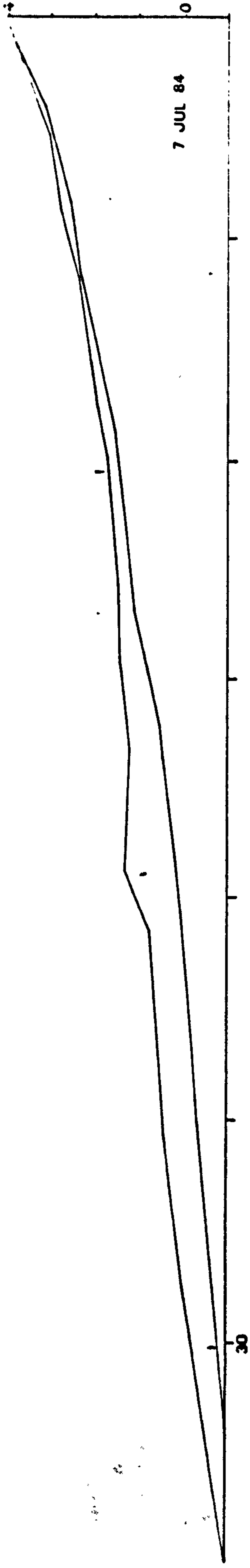






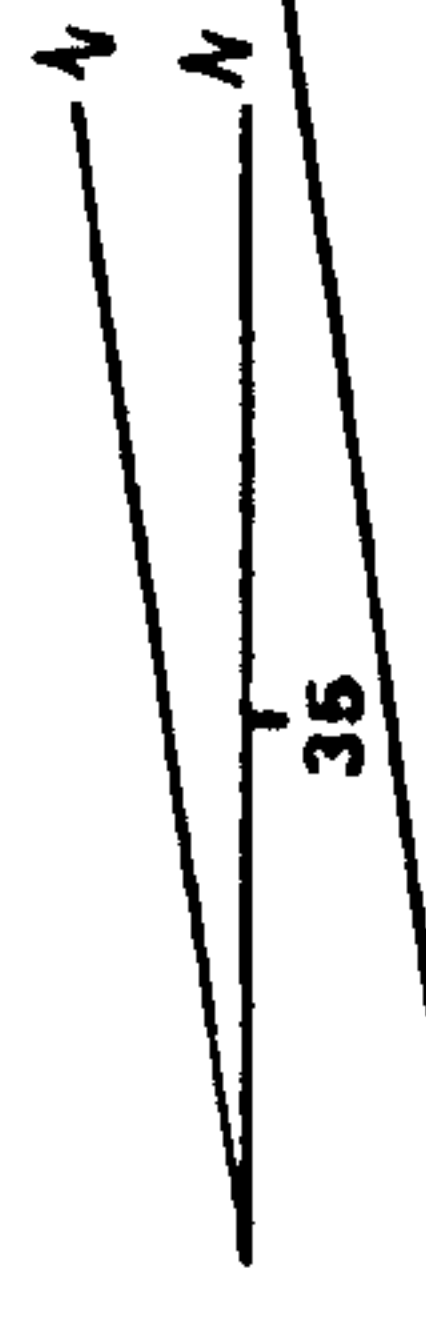
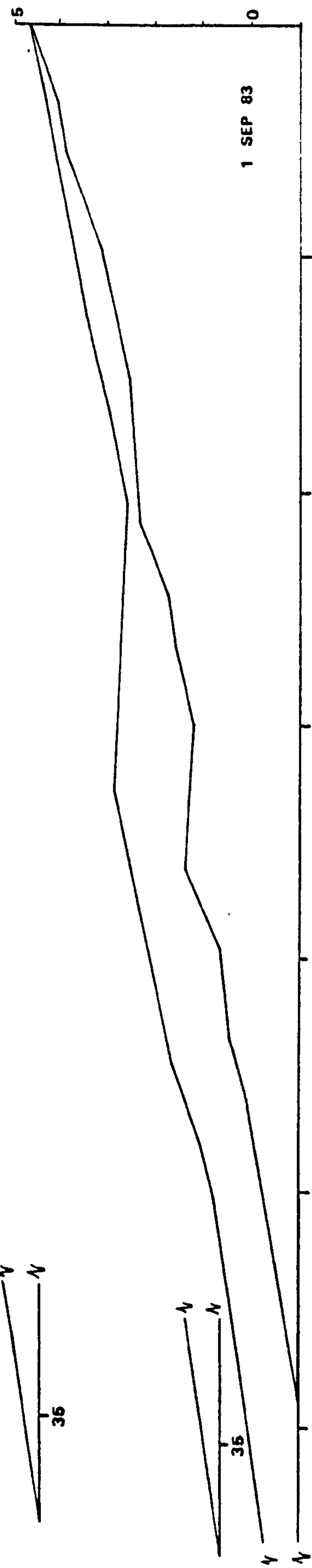
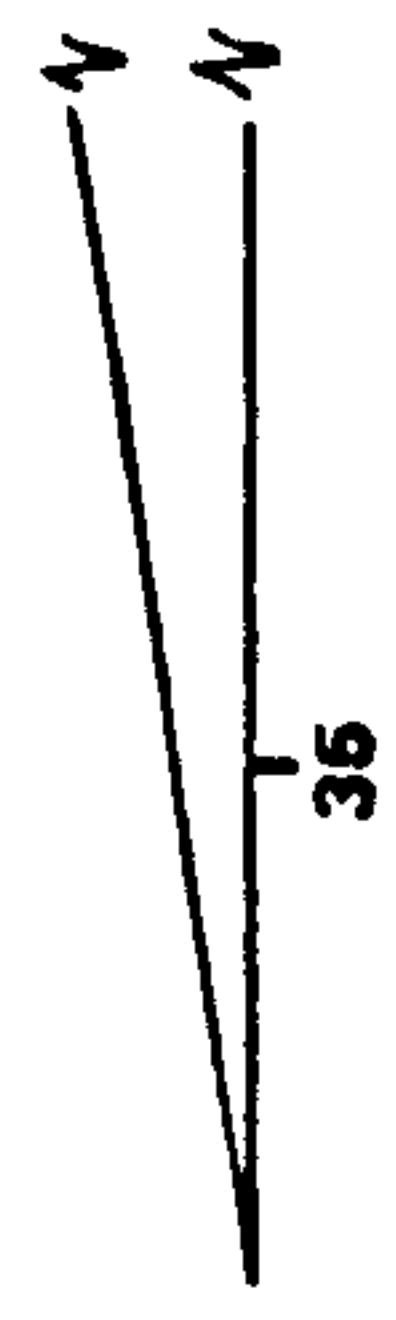
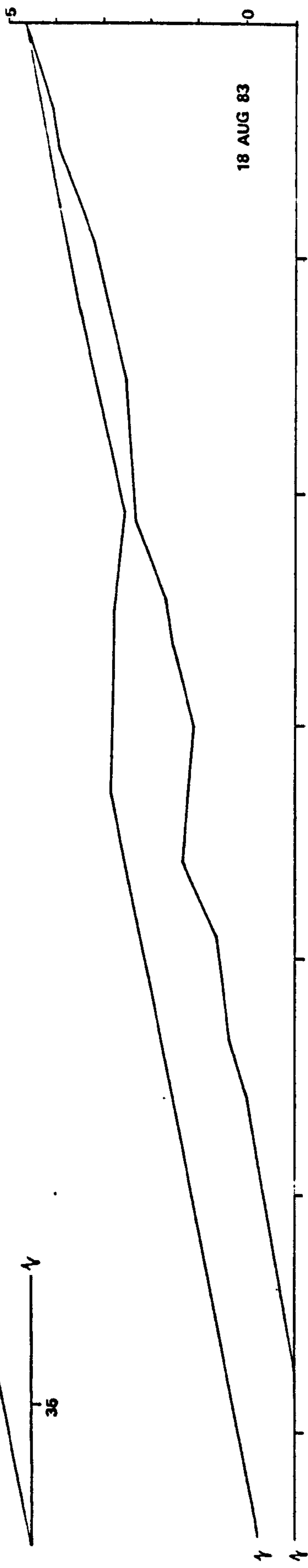
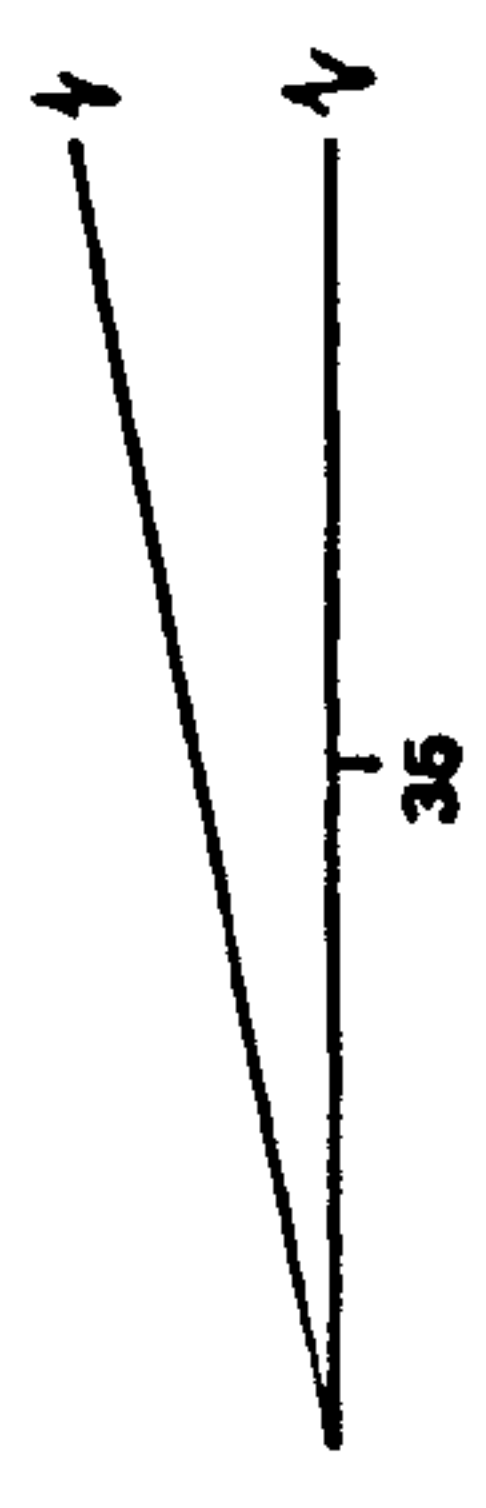
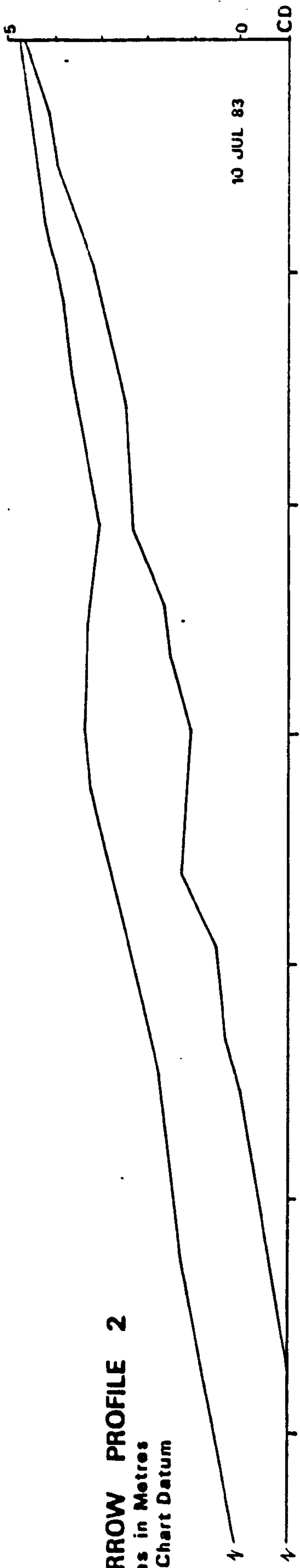


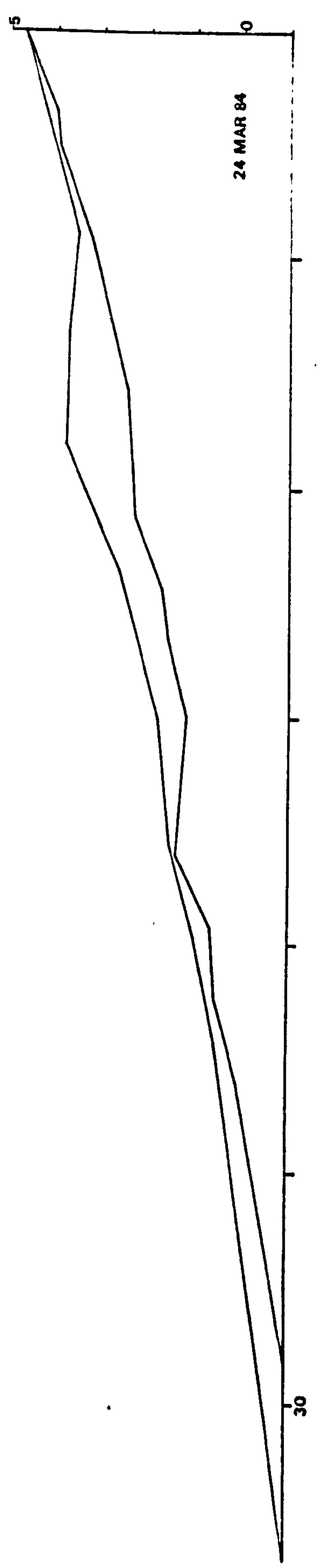
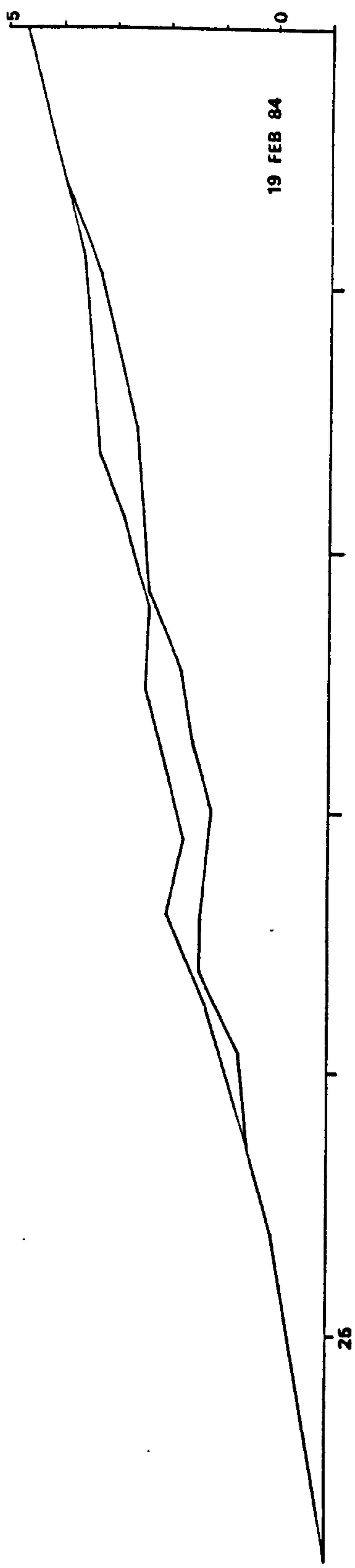
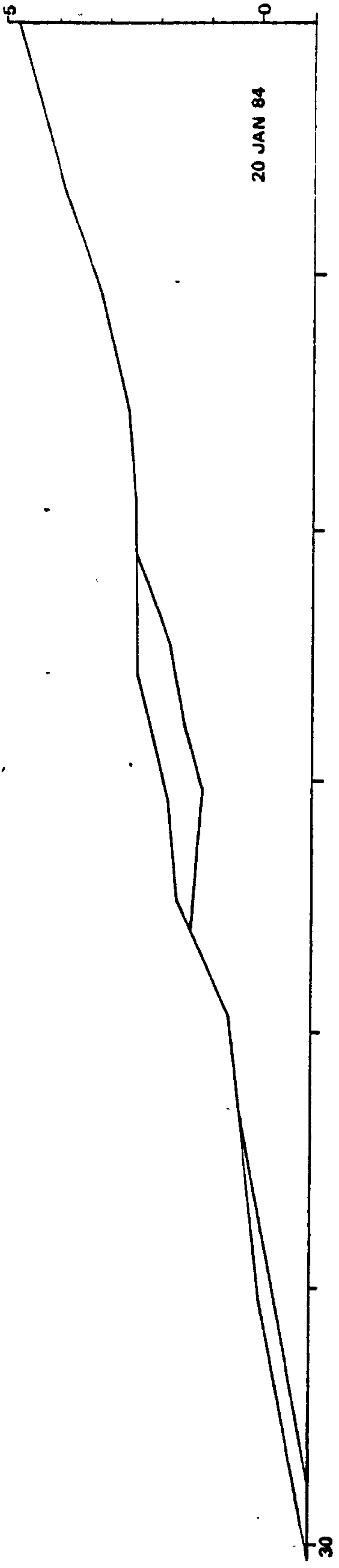


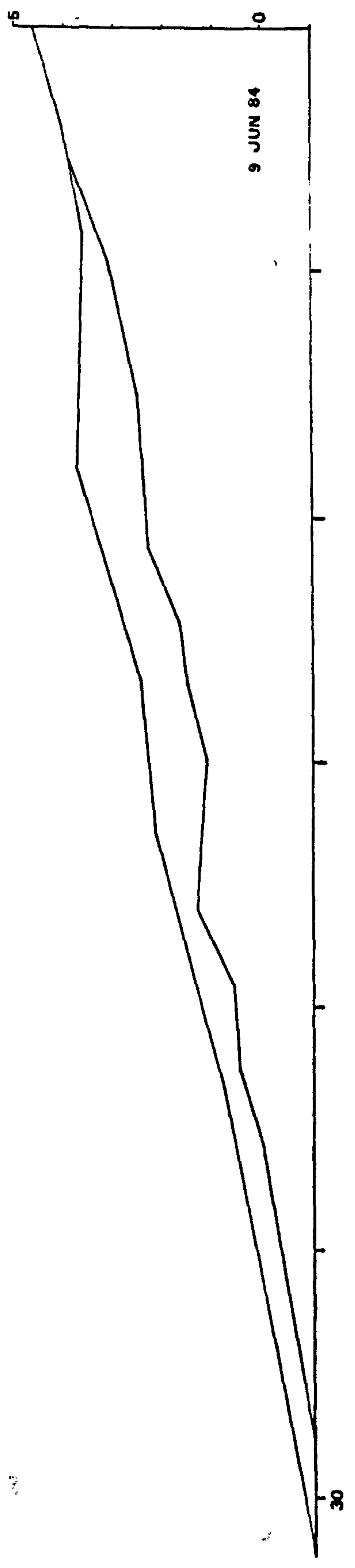
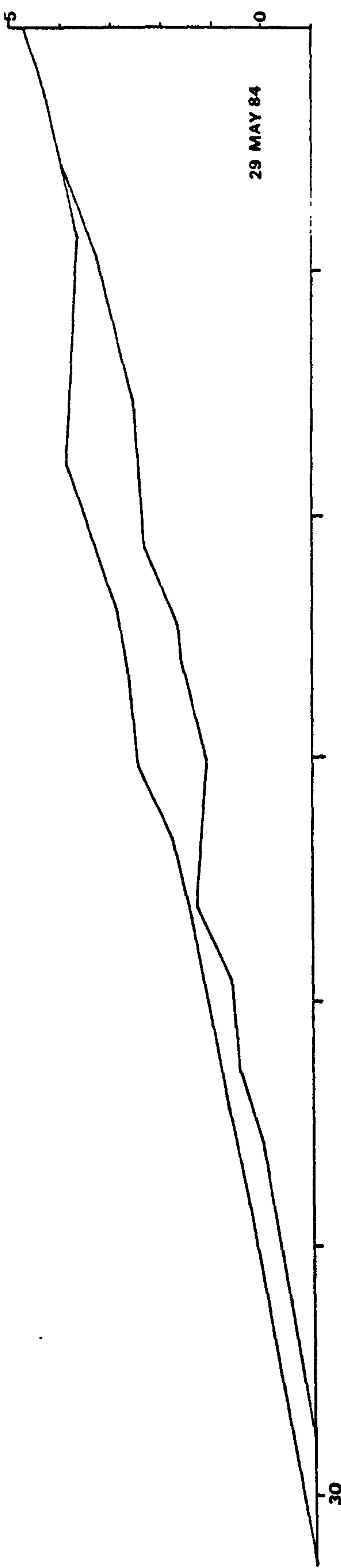
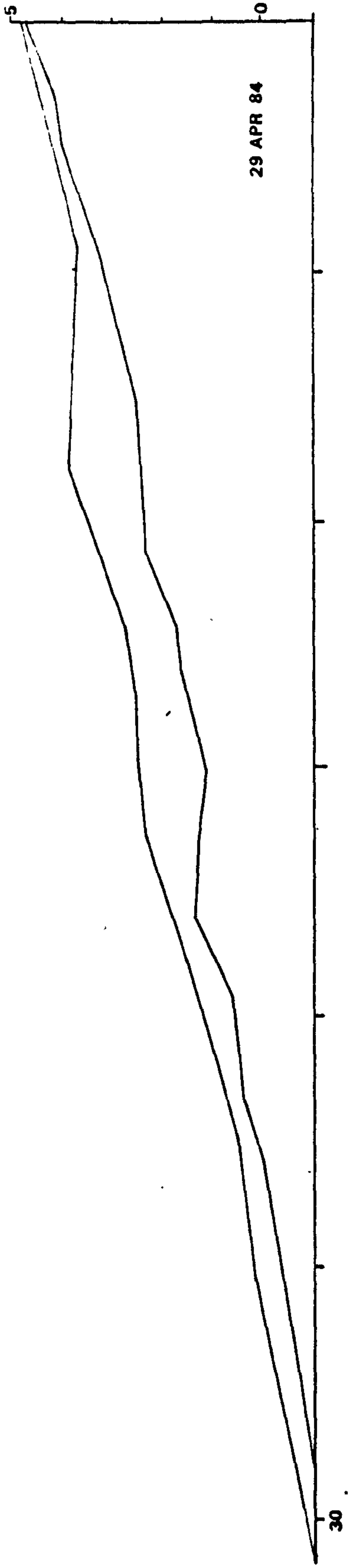


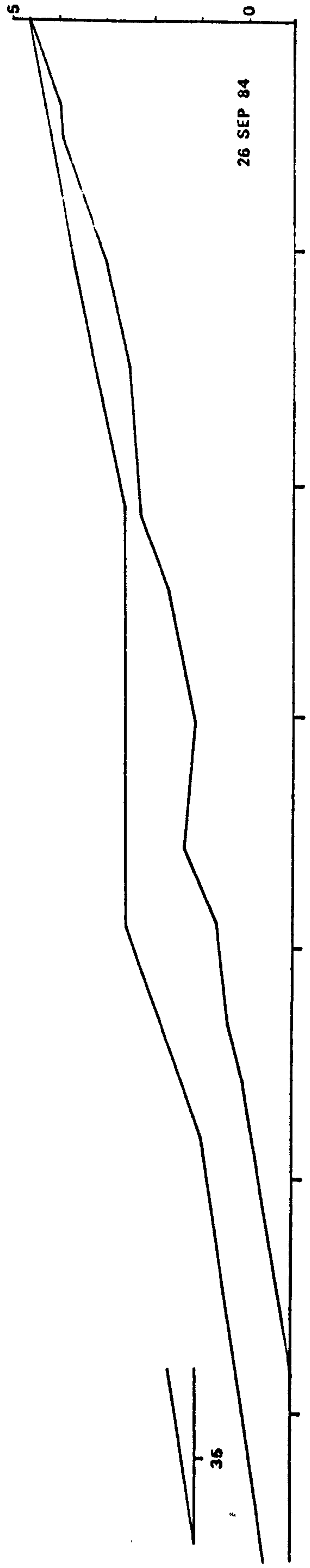
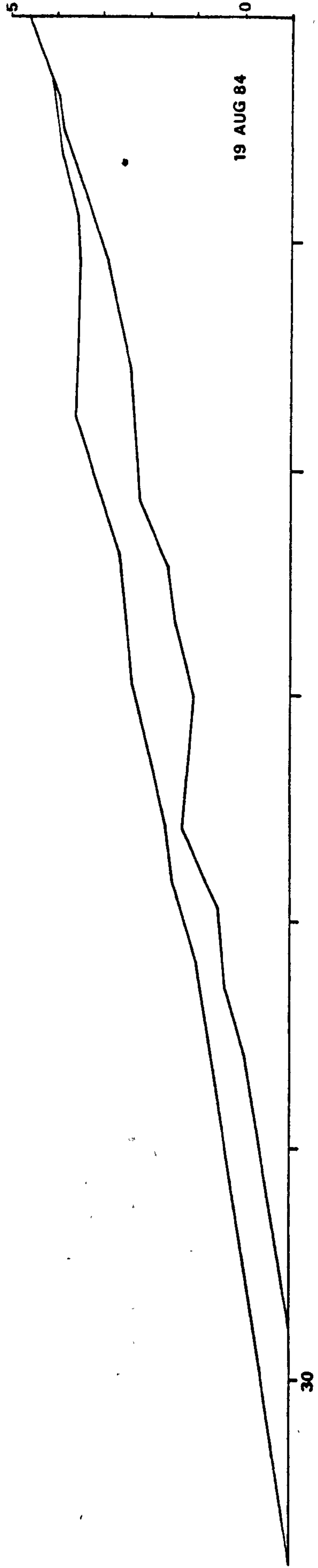
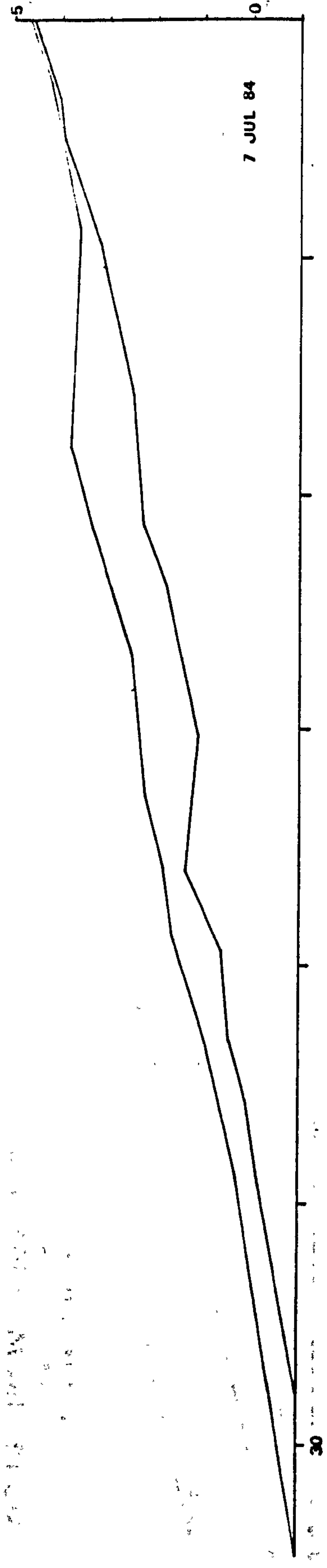
# WORBARROW PROFILE 2

Figures in Metres  
C.D.: Chart Datum



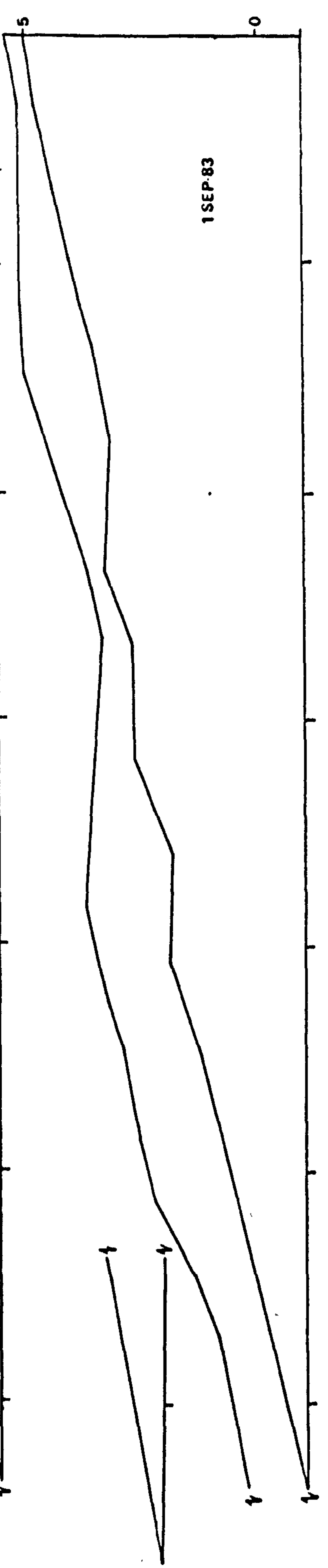
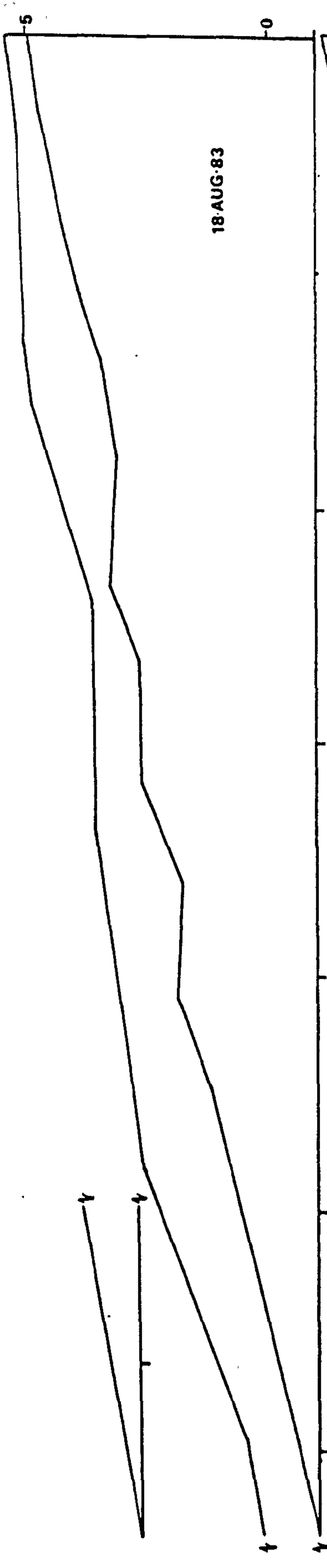
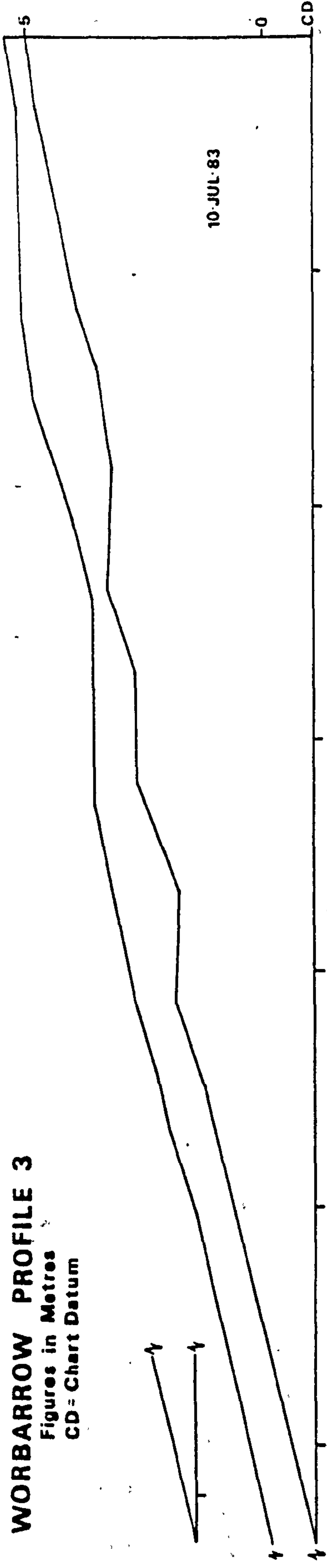


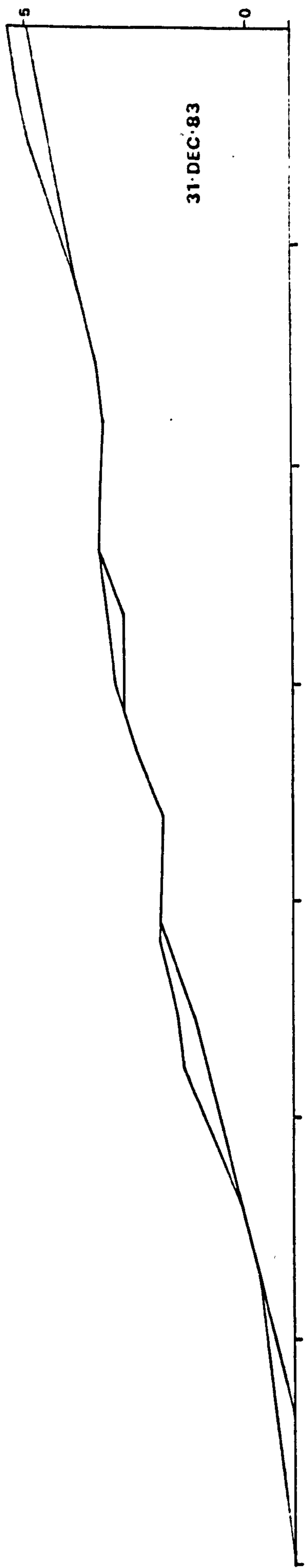
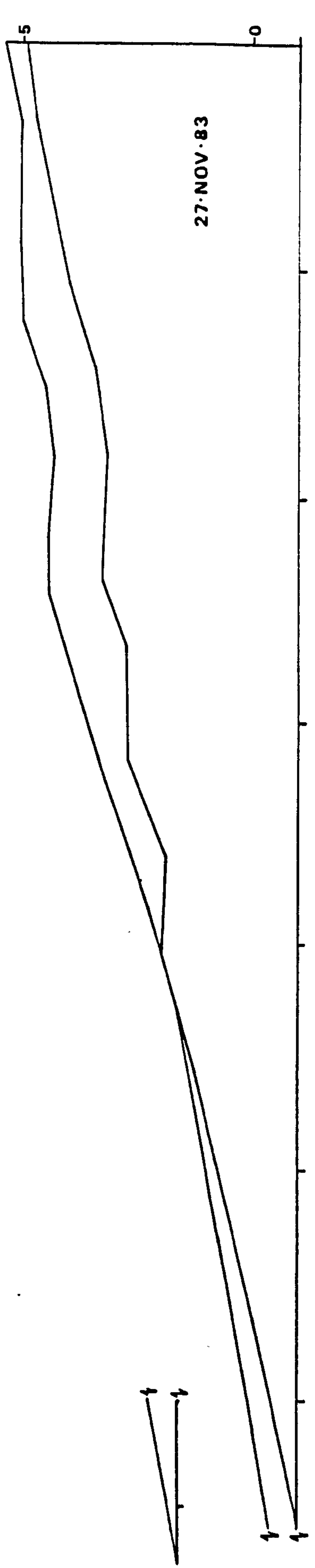
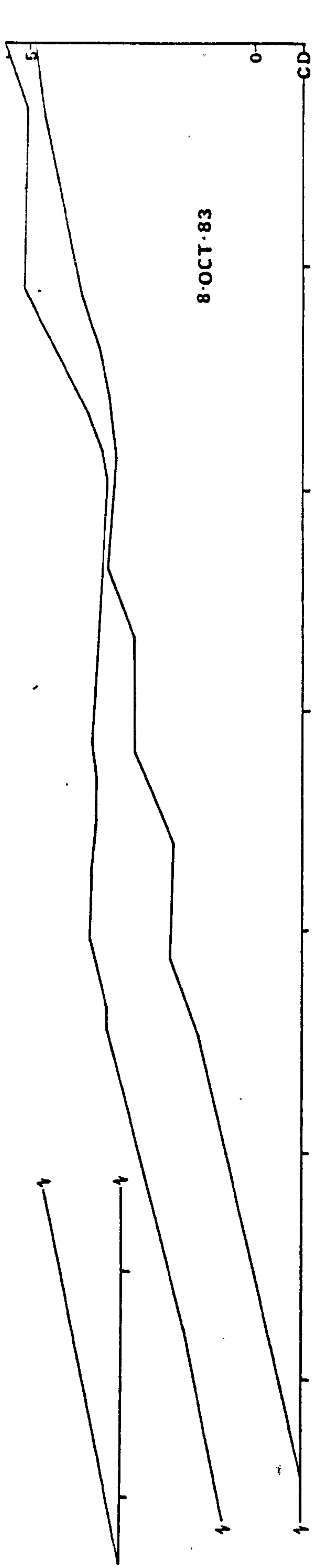




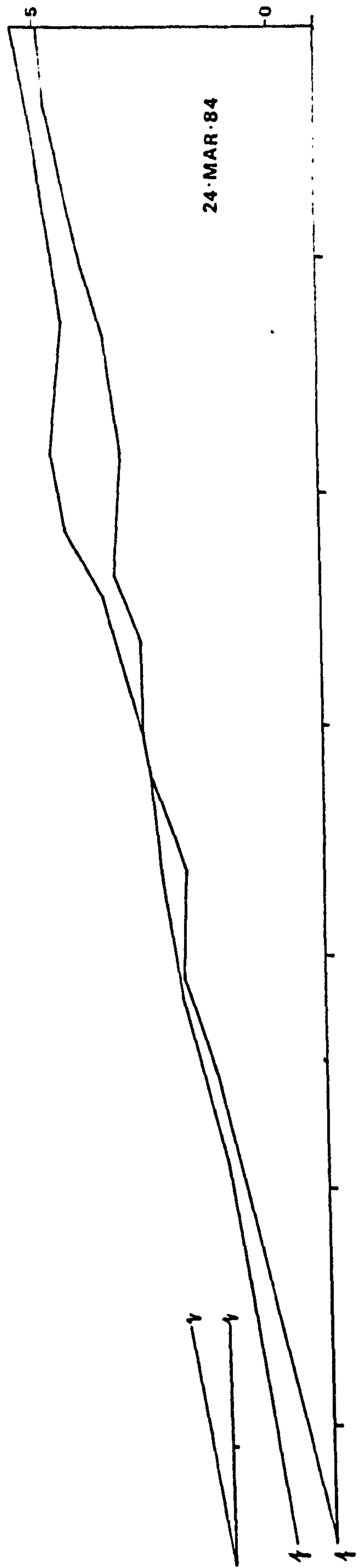
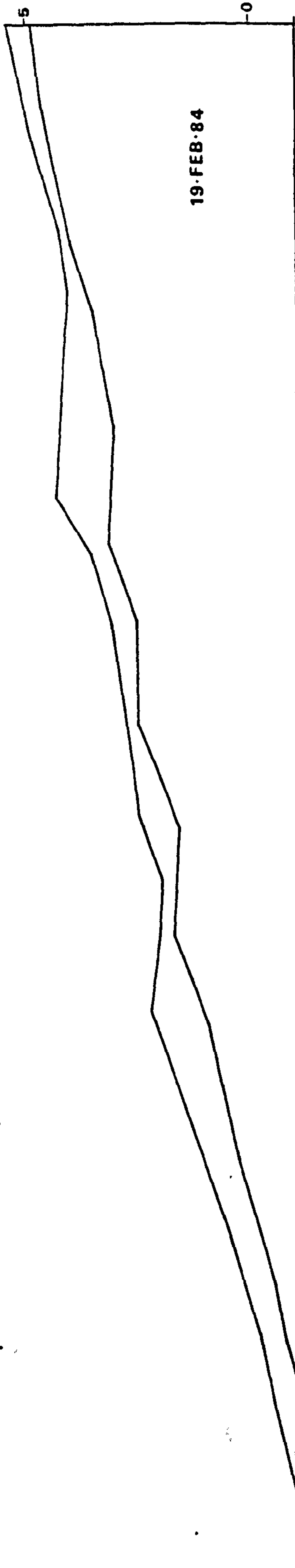
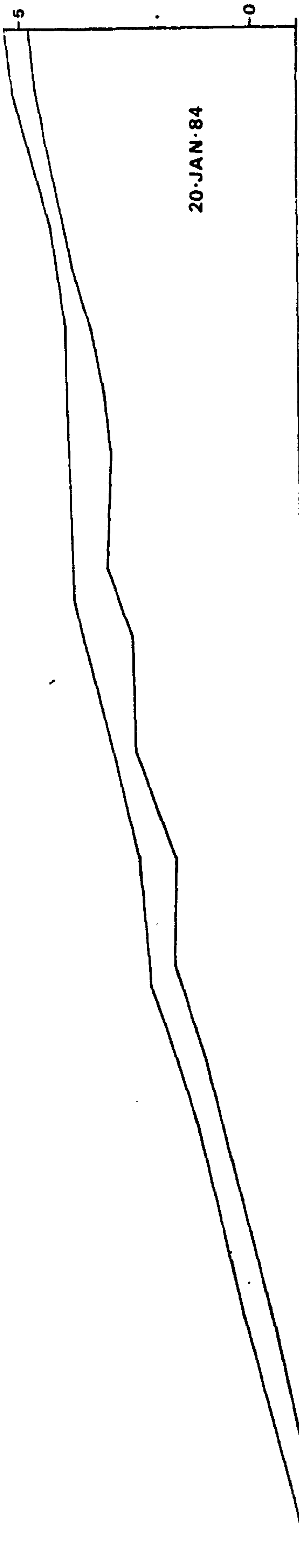
# WORBARROW PROFILE 3

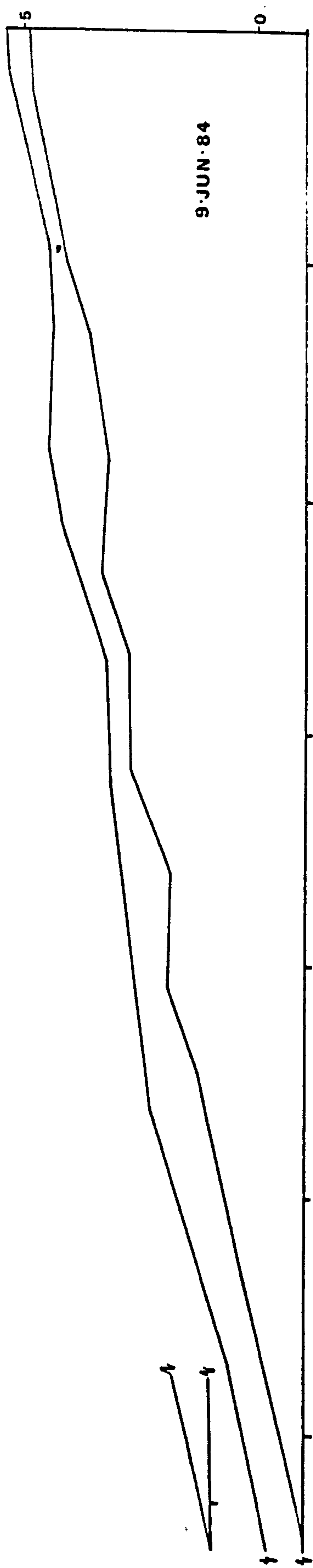
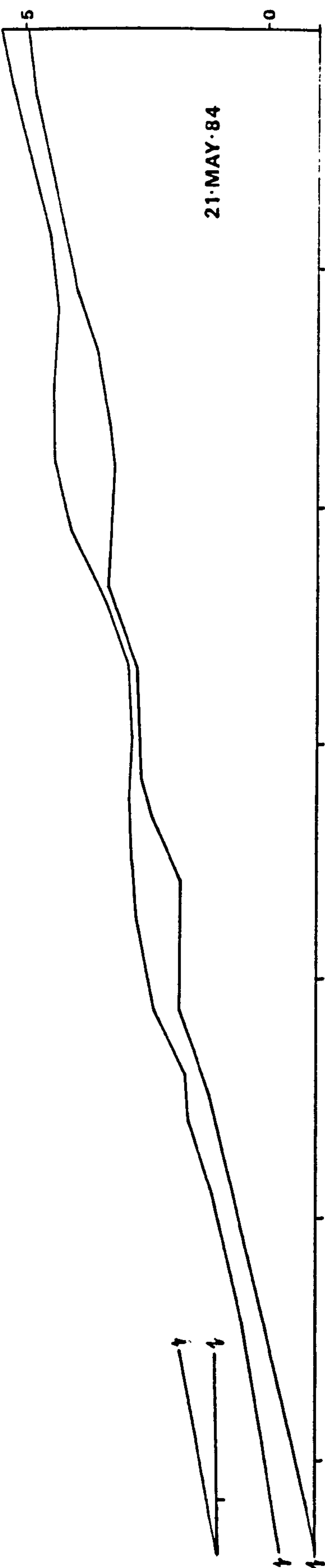
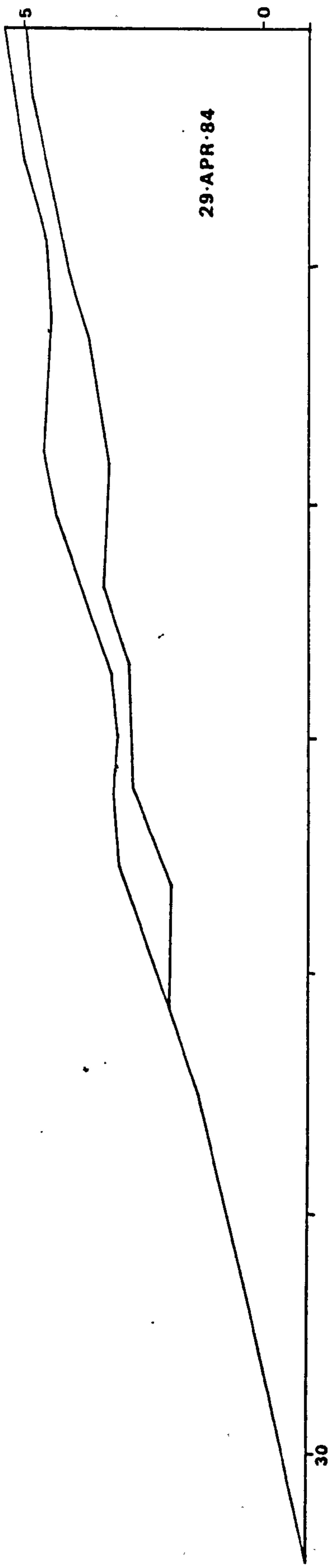
Figures in Metres  
CD = Chart Datum

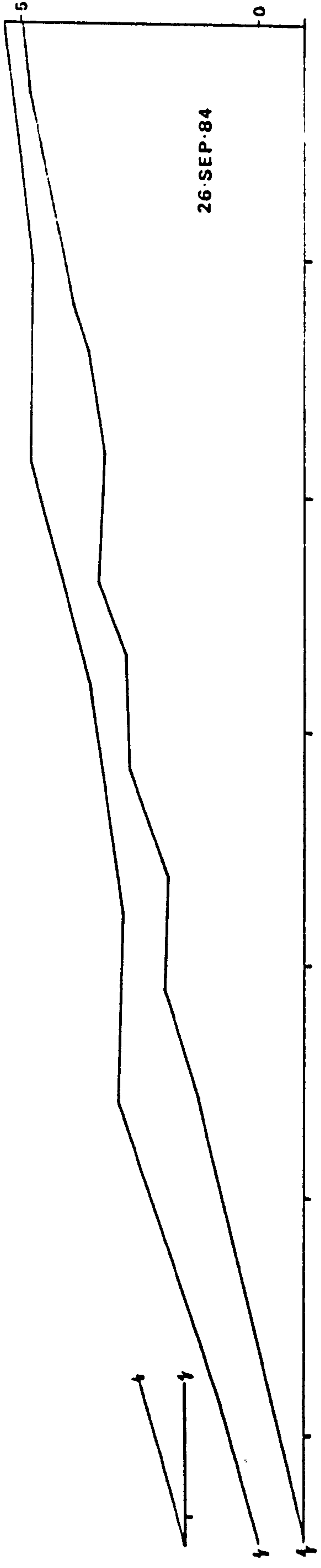
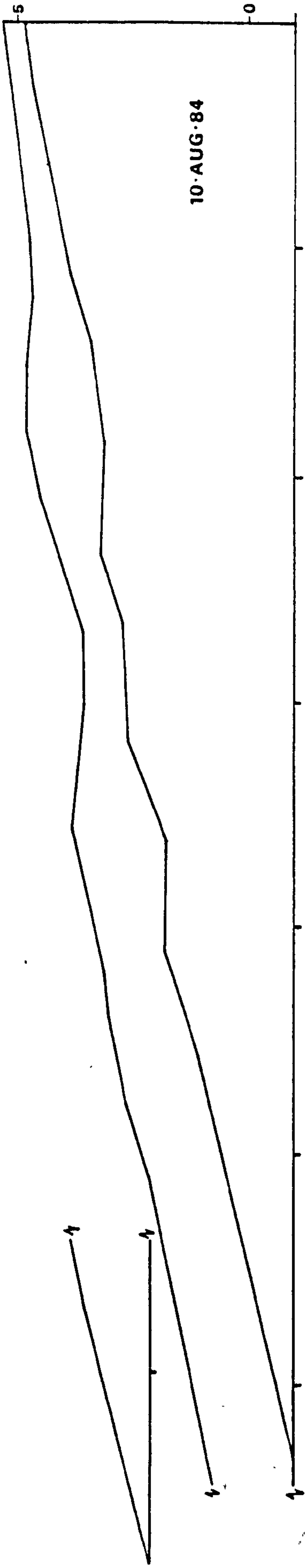
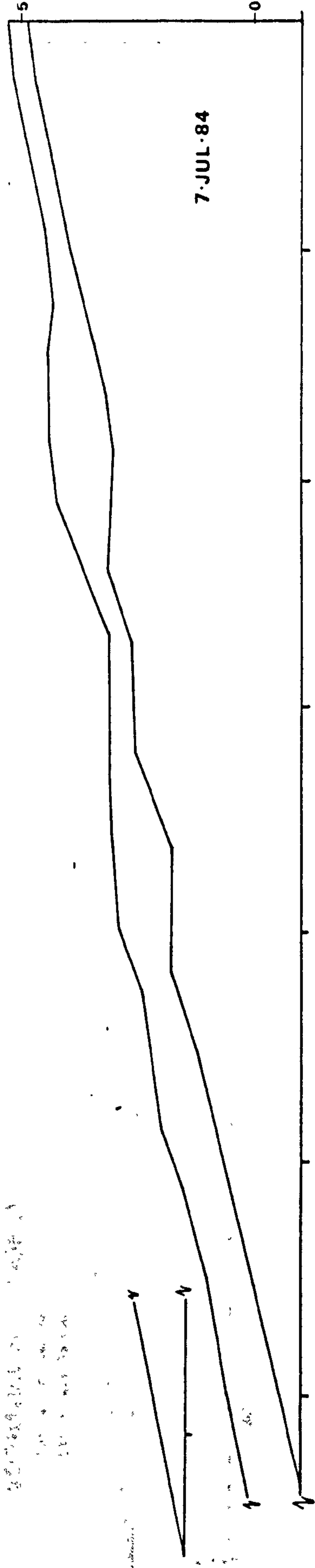












# WORBARROW PROFILE 4

Figures in Metres  
CD = Chart Datum

