

**Canadian Data Report of  
Fisheries and Aquatic Sciences No. 676**

**December 1987**

**PHYTOPLANKTON PRODUCTIVITY IN JONES SOUND DURING  
AUGUST AND SEPTEMBER, 1984**

**by**

**B. Irwin, E.P.W. Horne, E. Boulding and T. Platt**

**Biological Sciences Branch  
Department of Fisheries and Oceans**

**Bedford Institute of Oceanography  
P.O. Box 1006  
Dartmouth, Nova Scotia  
Canada B2Y 4A2**

**©Minister of Supply and Services Canada 1987  
Cat. No. FS 97-13/676E      ISSN 0706-6465**

**Correct citation for this publication:**

**Irwin, B., Horne, E.P.W., Boulding, E. and Platt, T. 1987. Phytoplankton productivity in Jones Sound during August and September, 1984. Can. Data Rep. Fish. Aquat. Sci. No. 676: iv + 160 p.**

## Abstract

**Irwin, B., Horne, E.P.W., Boulding, E. and Platt, T. 1987. Phytoplankton productivity in Jones Sound during August and September, 1984. Can. Data Rep. Fish. Aquat. Sci. No. 676: iv + 160 p.**

During the period August 18 to September 3, 1984, a series of primary productivity experiments were conducted on CSS Baffin in Jones Sound. In this report we make available the raw data and also the fitted light saturation parameters.

## Résumé

**Irwin, B., Horne, E.P.W., Boulding, E. and Platt, T. 1987. Phytoplankton productivity in Jones Sound during August and September, 1984. Can. Data Rep. Fish. Aquat. Sci. No. 676: iv + 160 p.**

Pendant la période du 18 Août à 3 Septembre une série d'expériences de productivité primaire ont été effectué au bord du CSS Baffin dans le détroit de Jones. Dans ce rapport nous présentons les données brutes sur ces expériences ainsi que les paramètres qui furent calculées pour représenter les courbes de production en fonction de la lumière.

**CONTENTS**

<b>Abstract/Résumé.....</b>	<b>iii</b>
<b>Introduction.....</b>	<b>1</b>
<b>Sampling.....</b>	<b>1</b>
<b>Methods.....</b>	<b>1</b>
<b>Productivity.....</b>	<b>1</b>
<b>Chlorophyll.....</b>	<b>2</b>
<b>Organic Particulates.....</b>	<b>2</b>
<b>Nutrients.....</b>	<b>2</b>
<b>Incubation and Incident Light.....</b>	<b>2</b>
<b>Estimation of Photosynthetic Parameters.....</b>	<b>3</b>
<b>Acknowledgement.....</b>	<b>3</b>
<b>References.....</b>	<b>4</b>

## **Introduction**

This is the twelfth in a series of data reports giving the results of experiments on photosynthetic production versus light intensity for natural phytoplankton populations in the North Atlantic and adjacent waters north of 50°N. Samples were collected from CSS Baffin, in Jones Sound, from August 17 to September 3, 1984. This was a joint cruise with the Hydrographic Division of the Bedford Institute of Oceanography.

## **Sampling**

All water samples were collected with 30ℓ niskin bottles. Sampling depths were selected from physical (e.g. mixed layer) or biological (e.g. chlorophyll maximum) features or from standard oceanographic depths. Temperature and salinity were measured with a Guildline® model 8709 CTD, attenuation with an Oregon® attenuance meter and "in situ" fluorescence with an Aquatracka® submersible fluorometer. All data were logged on a Hewlett Packard® model 9826 computer.

## **Methods**

### **Productivity**

Primary productivity was measured using the  $^{14}\text{C}$  technique and the oxygen evolution method. The  $^{14}\text{C}$  method was essentially that as described by Strickland and Parsons (1972). 20  $\mu\text{Ci}$  of sodium bicarbonate  $^{14}\text{C}$  was added to each of 42 light and 2 dark bottles containing approximately 100 mls of sample. Samples were incubated in a modified temperature controlled incubator (Larsen, in prep.). Illumination was supplied by a 250 watt tungsten halogen lamp (Gilway Technical Lamp Co. #L7391). The output from the lamp passed through a beam collimator and then a series of mirrors to give the desired light levels. Bottles were incubated for 2 hours.

For oxygen experiments the high precision Winkler technique of Williams and Jenkinson (1982) was used. 42 light, 3 dark and 3 time zero bottles were filled for each experiment. The time zero bottles were pickled immediately after filling. Bottles were incubated in standard incubators illuminated with 2000 watt tungsten halogen lamps (Irwin et al. 1983). The control  $^{14}\text{C}$  experiments run concurrently with the oxygen experiments were also incubated in these standard incubators rather than in the modified incubators. All experiments were run for 4 hours.

### **Chlorophyll**

Replicate 100 ml samples were filtered onto 25mm Whatman GF/F glass fibre filters. Filters were placed in 20 ml glass scintillation vials containing 10.0 mls of 85% acetone. Chlorophyll was extracted for 24 hours in the dark at 0°C. Chlorophyll concentrations were estimated using the fluorometric technique of Yentsch and Menzel (1963) as modified by Holm Hansen et al. (1965).

### **Organic Particulates**

Replicate 250 or 500 ml samples were filtered onto precombusted 25 mm Whatman GF/F Glass Fibre filters. Filters were stored frozen at -20°C for later analysis. POC and PON was estimated by combusting the filters in a Perkin Elmer model 240 elemental analyser.

### **Nutrients**

Samples for inorganic phosphate, silicate and nitrate were stored frozen at -20°C and returned to the laboratory for later analysis. Standard methods for a Technicon II auto analyser were used in the analysis.

### **Incubation and Incident Light**

Photosynthetically active radiation (PAR) was measured at each bottle position in the incubators with a  $4\pi$  quantum meter (Biospherical Instruments QSL 100). Surface PAR was measured with a  $2\pi$  quantum meter (Licor Li 190S) and surface total radiation with an Eppley 40 junction black and white pyranometer (model 8-

40). Surface radiation was logged hourly on Licor Li 550 printing integrators.

#### Estimation of Photosynthetic Parameters

Estimates of specific production  $P^B$  and irradiance  $I$  were used to estimate parameters in the equation of Platt et al. (1981)

$$P^B = P_s \left( 1 - e^{-\alpha I/P_s} \right) e^{-\beta I/P_s}$$

$P_s$  (mg C mg Chl<sup>-1</sup> h<sup>-1</sup>) is the light saturated rate of photosynthesis in the absence of photoinhibition,  $\alpha$  (mg C (mg Chl)<sup>-1</sup> h<sup>-1</sup> w<sup>-1</sup> m<sup>-2</sup>) is the initial slope of the PI curve, and  $\beta$  (same units as  $\alpha$ ), is a parameter that characterises photoinhibition. Complete details of the fitting routine are given in Irwin et al. (1982) and a discussion of the mathematical basis for this technique is in Irwin et al. (1980).

#### Acknowledgement

We wish to thank Carla Caverhill, Darlene Mossman, Al MacDonald and Mark Hodgson for their assistance in the analysis of samples and preparation of data for this report.

### References

- Holm-Hansen, O., C.J. Lorenzen, R.W. Holmes and J.D.H. Strickland (1965) Fluorometric determination of chlorophyll. *J. Cons. Int. Explor. mer* 30: 3-15.
- Irwin, B., L. Harris, M. Hodgson, E. Horne and T. Platt (1983) Primary productivity and nutrient measurements in Northern Foxe Basin, N.W.T. from 27 August to 7 September 1981. *Can. Data Rep. Fish. Aquat. Sci.* No. 385: 40 pp.
- Irwin, B., T. Platt, W.G. Harrison, C.L. Gallegos and P. Lindley (1982) Phytoplankton productivity experiments and nutrient measurements in Ungava Bay NWT from August 1 to September 3, 1979. *Can. Data Rep. Fish. Aquat. Sci.* No. 287: 208 p.
- Irwin, B., W.G. Harrison, C.L. Gallegos and T. Platt (1980) Phytoplankton productivity experiments and nutrient measurements in the Labrador Sea, Davis Strait, Baffin Bay and Lancaster Sound from 26 August to 14 September 1978. *Can. Data Rep. Aquat. Sci.* No. 213: 103 p.
- Platt, T., C.L. Gallegos and W.G. Harrison (1981) Photoinhibition of photosynthesis in natural assemblages of marine phytoplankton. *J. Mar. Res.* 38(4): 687-701.
- Strickland, J.D.H. and T.R. Parsons (1972) A practical handbook of sea water analysis. *Bull. Fish. Res. Bd. Canada* No. 167: 311 p.
- Williams, P.J. LeB. and N.W. Jenkinson (1982) A transportable microprocessor-controlled Winkler titration suitable for field station and ship board use. *Limnol. Oceanogr.* 27(3): 576-584.
- Yentsch, C.S. and D.W. Menzel (1963) A method for the determination of phytoplankton chlorophyll and phaeophytin by fluorescence. *Deep-Sea Res.* 10: 221-231.

**Profiles of Chlorophyll, POC, PON and  
Inorganic Nutrients in Jones Sound**



LAT. 75°53'N

LONG. 83°55'W

DATE 18/8/84

Depth M	CHL mg m <sup>-3</sup>	NO <sub>3</sub> mg at m <sup>-3</sup>	SiO <sub>3</sub> mg at m <sup>-3</sup>	PO <sub>4</sub> mg at m <sup>-3</sup>	CARBON mg m <sup>-3</sup>	NITROGEN mg m <sup>-3</sup>
5	0.52	0.0	4.03	0.36	181	18
10	4.33	0.04	5.65	0.52	-	-
17	5.20	0.01	5.03	0.52	-	-
25	5.32	0.35	6.31	0.72	389	44
27	8.69	1.52	5.00	0.80	-	-
50	1.83	8.07	26.07	1.39	-	-
50	2.56	7.35	24.48	1.11	178	20

LAT. 75°50'N

LONG. 87°20'W

DATE 19/8/84

Depth M	CHL mg m <sup>-3</sup>	NO <sub>3</sub> mg at m <sup>-3</sup>	SiO <sub>3</sub> mg at m <sup>-3</sup>	PO <sub>4</sub> mg at m <sup>-3</sup>	CARBON mg m <sup>-3</sup>	NITROGEN mg m <sup>-3</sup>
2	10.12	0.00	8.78	0.57	498	73
8	9.60	1.09	10.36	0.49	483	67
15	7.39	1.95	10.60	0.49	349	50
20	4.74	3.92	14.24	0.43	152	28
50	0.43	7.02	20.89	0.77	134	7

LAT. 76°43'N

LONG. 83°58.7'W

DATE 20/8/84

Depth M	CHL mg m <sup>-3</sup>	NO <sub>3</sub> mg at m <sup>-3</sup>	SiO <sub>3</sub> mg at m <sup>-3</sup>	PO <sub>4</sub> mg at m <sup>-3</sup>	CARBON mg m <sup>-3</sup>	NITROGEN mg m <sup>-3</sup>
5	0.82	0.00	3.41	0.38	242	32
12	4.54	0.35	2.78	0.67	405	47
20	4.79	3.03	10.98	0.57	289	45
25	4.62	4.84	17.21	1.08	302	40
50	1.24	7.01	23.83	0.70	153	18

LAT. 76°08.9'N

LONG. 84°02.9'W

DATE 21/8/84

Depth M	CHL mg m <sup>-3</sup>	NO <sub>3</sub> mg at m <sup>-3</sup>	SiO <sub>3</sub> mg at m <sup>-3</sup>	PO <sub>4</sub> mg at m <sup>-3</sup>	CARBON mg m <sup>-3</sup>	NITROGEN mg m <sup>-3</sup>
5	0.16	0.36	1.44	0.17	125	13
16	0.94	0.41	2.13	0.39	193	24
24	1.18	1.28	5.23	0.54	163	20
39	1.45	4.34	14.15	0.91	226	27
59	0.98	9.09	28.98	1.07	152	14
80	0.94	7.46	23.24	0.70	111	11

LAT. 76°22.5'N

LONG. 83°06.8'W

DATE 23/8/84

Depth M	CHL mg m <sup>-3</sup>	NO <sub>3</sub> mg at m <sup>-3</sup>	SiO <sub>3</sub> mg at m <sup>-3</sup>	PO <sub>4</sub> mg at m <sup>-3</sup>	CARBON mg m <sup>-3</sup>	NITROGEN mg m <sup>-3</sup>
5	0.27	0.36	2.02	0.23	145	13
20	0.42	0.37	1.46	0.32	164	17
35	3.55	0.42	2.88	0.50	320	68
42	5.94	6.92	19.58	1.11	323	46
60	2.97	7.30	23.10	1.09	232	35

LAT. 76°17.6'N

LONG. 88°32.9'W

DATE 24/8/84

Depth M	CHL mg m <sup>-3</sup>	NO <sub>3</sub> mg at m <sup>-3</sup>	SiO <sub>3</sub> mg at m <sup>-3</sup>	PO <sub>4</sub> mg at m <sup>-3</sup>	CARBON mg m <sup>-3</sup>	NITROGEN mg m <sup>-3</sup>
5	0.57	0.129	5.11	0.34	155	18
15	3.47	0.34	6.16	0.29	221	35
25	7.01	3.21	14.75	0.81	396	65
30	8.76	2.88	13.40	1.19	405	73
60	2.93	8.90	28.31	1.21	160	18

LAT. 76°11.8'N

LONG. 87°20.3'W

DATE 25/8/84

Depth M	CHL mg m <sup>-3</sup>	NO <sub>3</sub> mg at m <sup>-3</sup>	SiO <sub>3</sub> mg at m <sup>-3</sup>	PO <sub>4</sub> mg at m <sup>-3</sup>	CARBON mg m <sup>-3</sup>	NITROGEN mg m <sup>-3</sup>
5	1.16	0.09	2.86	0.48	349	32
15	4.13	2.68	10.80	0.76	372	48
25	3.42	3.98	14.84	1.01	276	29
30	3.01	5.85	20.42	1.03	196	26
60	0.92	8.73	28.49	1.29	136	15

LAT. 76°12.4'N

LONG. 83°53.7'W

DATE 26/8/84

Depth M	CHL mg m <sup>-3</sup>	NO <sub>3</sub> mg at m <sup>-3</sup>	SiO <sub>3</sub> mg at m <sup>-3</sup>	PO <sub>4</sub> mg at m <sup>-3</sup>	CARBON mg m <sup>-3</sup>	NITROGEN mg m <sup>-3</sup>
10	0.27	0.04	4.11	0.33	100	20
23	1.21	0.04	2.91	0.39	310	33
30	1.56	0.08	2.85	0.52	314	34
35	2.01	3.04	11.68	0.87	284	30
45	0.75	6.15	19.22	0.67	163	22

LAT. 75°48.5'N

LONG. 85°1.3'W

DATE 27/8/84

Depth M	CHL mg m <sup>-3</sup>	NO <sub>3</sub> mg at m <sup>-3</sup>	SiO <sub>3</sub> mg at m <sup>-3</sup>	PO <sub>4</sub> mg at m <sup>-3</sup>	CARBON mg m <sup>-3</sup>	NITROGEN mg m <sup>-3</sup>
5	1.35	0.28	6.19	0.28	197	26
15	3.59	0.20	5.30	0.34	343	42
22	9.47	0.89	3.84	0.39	532	65
40	4.58	5.86	16.43	0.66	310	30
55	2.97	8.19	22.69	0.65	172	18

LAT. 75°48'N

LONG. 86°02.1'W

DATE 28/8/84

Depth M	CHL mg m <sup>-3</sup>	NO <sub>3</sub> mg at m <sup>-3</sup>	SiO <sub>3</sub> mg at m <sup>-3</sup>	PO <sub>4</sub> mg at m <sup>-3</sup>	CARBON mg m <sup>-3</sup>	NITROGEN mg m <sup>-3</sup>
5	2.81	0.11	1.36	0.21	252	31
15	3.22	0.16	1.34	0.21	316	42
20	6.55	0.15	2.18	0.42	471	56
30	7.14	0.65	2.17	0.30	380	41
50	2.93	5.69	15.96	0.67	197	25

LAT. 76°10.4'N

LONG. 83°54.1'W

DATE 1/9/84

Depth M	CHL mg m <sup>-3</sup>	NO <sub>3</sub> mg at m <sup>-3</sup>	SiO <sub>3</sub> mg at m <sup>-3</sup>	PO <sub>4</sub> mg at m <sup>-3</sup>	CARBON mg m <sup>-3</sup>	NITROGEN mg m <sup>-3</sup>
5	0.49	0.08	4.05	0.48	155	16
20	0.72	0.09	3.33	0.45	163	19
25	1.95	0.09	2.02	0.32	218	24
31	6.15	1.59	5.40	0.79	372	48
45	4.46	6.07	14.64	0.75	289	39

LAT. 76°34.4'N

LONG. 84°56.0'W

DATE 2/9/84

Depth M	CHL mg m <sup>-3</sup>	NO <sub>3</sub> mg at m <sup>-3</sup>	SiO <sub>3</sub> mg at m <sup>-3</sup>	PO <sub>4</sub> mg at m <sup>-3</sup>	CARBON mg m <sup>-3</sup>	NITROGEN mg m <sup>-3</sup>
5	2.60	0.05	5.27	0.01	466	42
15	1.12	0.85	6.48	0.26	289	22
25	0.33	1.24	10.33	0.62	186	8

LAT. 76°34.5'N

LONG. 84°56.0'W

DATE 2/9/84

Depth M	CHL mg m <sup>-3</sup>	NO <sub>3</sub> mg at m <sup>-3</sup>	SiO <sub>3</sub> mg at m <sup>-3</sup>	PO <sub>4</sub> mg at m <sup>-3</sup>	CARBON mg m <sup>-3</sup>	NITROGEN mg m <sup>-3</sup>
5	3.88	0.09	5.07	0.06	448	48
16	2.31	1.76	11.96	0.49	244	26
25	0.22	2.64	14.86	0.89	176	14

LAT. 76°20.8'N

LONG. 89°04.9'W

DATE 3/9/84

Depth M	CHL mg m <sup>-3</sup>	NO <sub>3</sub> mg at m <sup>-3</sup>	SiO <sub>3</sub> mg at m <sup>-3</sup>	PO <sub>4</sub> mg at m <sup>-3</sup>	CARBON mg m <sup>-3</sup>	NITROGEN mg m <sup>-3</sup>
0	0.38	4.75	16.76	0.87	63	7
5	0.18	5.05	17.33	0.74	117	12
10	0.10	4.59	16.02	0.74	159	10
20	0.13	6.20	20.96	1.17	119	10
30	0.12	5.89	21.00	1.16	128	10
50	0.17	9.44	26.61	1.38	94.	12



**Light Saturation Data and Related Biomass and Inorganic  
Nutrient Measurements**



**Units**

$$P = \text{mg C m}^{-3} \text{ h}^{-1} (\text{mg Chl})^{-1}$$

$$I = \text{W m}^{-2}$$

$$P_s = \text{mg C mg Chl}^{-1} \text{ h}^{-1}$$

$$\alpha = \text{mg C} (\text{mg Chl})^{-1} \text{ h}^{-1} \text{ w}^{-1} \text{ m}^{-2}$$

$$\beta = \text{mg c} (\text{mg Chl})^{-1} \text{ h}^{-1} \text{ w}^{-1} \text{ m}^{-2}$$

Organic particulates are in  $\text{mg m}^{-3}$  and inorganic nutrients in  $\text{mg at m}^{-3}$ . The 90% confidence interval for  $P_s$ ,  $\alpha$  and  $\beta$  are shown in the closed brackets below the estimates for each parameter.



## JONES SOUND 1984

LAT 75 50.0' N		LONG 87 20.0' W		DATE 19/08/84		DEPTH	2 M
I	P	I	P	I	P	I	P
427	1.16	335	1.08	271	1.08	191	1.11
167	1.09	140	1.21	109	1.24	85	1.03
73	1.06	63	1.00	55	1.05	47	1.25
47	1.14	27	.85	23	1.03	19	1.00
17	.64	15	.83	14	.90	13	.70
12	.57	10	.48	8	.31	6	.32
5	.21	4	.30	3	.15	2	.04
2	.10	1	.05	1	.02	.9	.01
.7	:00	.6	:00				

## PARAMETER VALUES

PS : 1.15 ( 1.10, 1.21 )	ALPHA : .075 ( .069, .081 )	BETA : .0001 ( -.0002, .0004 )
-----------------------------	--------------------------------	-----------------------------------

SAMPLE TEMP	.0 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: 10.12	NITRATE	: .00
CARBON	: 498	SILICATE	: 8.78
NITROGEN	: 73	PHOSPHATE	: .54

## JONES SOUND 1984

LAT	75 50.0' N	LONG	87 20.0' W	DATE	19/08/84	DEPTH	8 M
	P		P		P		P
427	.79	335	.86	271	.97	235	1.06
191	1.05	167	1.08	109	1.01	63	1.06
47	.07	47	1.14	42	1.04	34	1.15
27	.03	23	.79	19	.83	17	.74
15	.68	14	.72	12	.55	10	.50
8	.68	6	.35	5	.18	4	.34
3	.15	2	.05	4	.08	1	.07
1	.03	1	.01	7	.00	.6	.01
.2	.00	.1	.01				

## PARAMETER VALUES

PS :	1.23	ALPHA :	.066	BETA :	.0012
(	1.18, 1.28 )	(	.062, .069 )	(	.0009, .0014 )

SAMPLE TEMP	- .5 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: 9.60	NITRATE	: 1.09
CARBON	: 483	SILICATE	: 10.36
NITROGEN	: 67	PHOSPHATE	: .49

## JONES SOUND 1984

LAT	75 50.0' N	LONG	87 20.0' W	DATE	19/08/84	DEPTH	15 M
	P		P		P		P
427	.84	335	.86	271	.87	235	.85
191	.88	167	1.01	140	1.10	109	1.06
85	.88	73	.88	55	.83	47	1.09
47	.84	42	.98	34	1.01	27	1.01
23	.73	19	1.01	17	.92	15	.75
14	.73	12	.51	10	.51	8	.48
6	.46	2	.21	4	.30	3	.11
20	.05	2	.07	1	.04	1	.04
1	.02	7	.01	.6	.01	.4	.01
	.01						

21

## PARAMETER VALUES

PS : 1.04	ALPHA : .087	BETA : .0006
( .99, 1.09 )	( .079, .096 )	( .0003, .0009 )

SAMPLE TEMP -1.0 C	INCUBATION TEMP -1.0 C
CHLOROPHYLL : 7.39	NITRATE : 1.95
CARBON : 349	SILICATE : 10.60
NITROGEN : 50	PHOSPHATE : .49

## JONES SOUND 1984

LAT 75 50.0' N		LONG 87 20.0' W		DATE 19/08/84		DEPTH 20 M	
I	P	I	P	I	P	I	P
427	.60	335	.55	271	.62	235	.66
191	.79	167	.77	140	.66	109	.75
85	.68	73	.67	63	.75	55	.72
47	.74	27	.70	23	.64	16	.61
17	.53	15	.60	14	.60	12	.37
10	.39	8	.32	6	.31	5	.21
4	.34	3	.12	2	.08	2	.11
1	.09	1	.05	.9	.04	.7	.02
.6	.03	.2	.00	.1	.01		

## PARAMETER VALUES

PS :	.78	ALPHA :	.060	BETA :	.0005
( .75, .81 )		( .056, .064 )		( .0004, .0007 )	

SAMPLE TEMP	-1.0 C	INCUBATION TEMP	-1.0 C
-------------	--------	-----------------	--------

CHLOROPHYLL :	4.74	NITRATE :	3.92
CARBON :	152	SILICATE :	14.24
NITROGEN :	28	PHOSPHATE :	.43

## JONES SOUND 1984

LAT	75 50.0' N	LONG	87 20.0' W	DATE	19/08/84	DEPTH	50 M
	P		P		P		P
526	.53	427	.60	335	.53	271	.55
235	.67	191	.57	167	.68	109	.62
85	.63	73	.54	63	.62	47	.58
42	.55	19	.46	17	.43	15	.53
14	.54	21	.46	10	.34	8	.30
6	.58	24	.24	4	.27	3	.17
22	.66	22	.11	1	.11	1	.10
.9	.07	.6	.03	.1	.01		

23

## PARAMETER VALUES

PS :	.60	ALPHA :	.064	BETA :	.0001
( .58, .63 )		( .059, .070 )		( .0000, .0002 )	

SAMPLE TEMP	-1.0 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: .43	NITRATE	: 7.02
CARBON	: 134	SILICATE	: 20.89
NITROGEN	: 7	PHOSPHATE	: .77

## JONES SOUND 1984

LAT	76 4.3' N	LONG	83 58.7' W	DATE	20/08/84	DEPTH	5 M
I	P	I	P	I	P	I	P
307	1.35	259	1.33	223	1.25	183	1.33
155	1.25	136	1.15	103	1.15	85	1.01
73	1.04	57	1.09	53	1.04	40	1.00
39	1.20	32	1.02	29	1.06	26	.79
23	.77	21	.70	19	.79	18	.99
14	.72	11	.62	10	.58	6	.43
8	.32	6	.20	4	.26	4	.14
0	.06	0	.04	2	.03	1	.00
-	.02	-	.00	-	-	-	-

## PARAMETER VALUES

PS : 1.21	ALPHA : .064	BETA : .0000
( 1.13, 1.29 )	( .059, .069 )	( - .0004, .0004 )

SAMPLE TEMP	.5 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL :	.82	NITRATE :	.00
CARBON :	242	SILICATE :	3.41
NITROGEN :	32	PHOSPHATE :	.38

## JONES SOUND 1984

LAT	76 4.3' N	LONG	83 58.7' W	DATE	20/08/84	DEPTH	12 M
I	P	I	P	I	P	I	P
427	.38	307	.50	259	.69	223	.69
183	.81	155	.86	136	.64	103	.84
85	.77	73	.98	57	.79	53	.95
40	.92	35	.85	29	.91	26	.77
23	.71	21	.72	19	.86	18	.91
14	.81	11	.73	10	.62	9	.58
8	.57	6	.67	4	.35	4	.26
3	.15	2	.15	2	.09	1	.07
1	.04	.8	.05	.6	.01	.3	.00
.2	.01						

## PARAMETER VALUES

PS : .97	ALPHA : .105	BETA : .0017
( .93, 1.01 )	( .096, .114 )	( .0013, .0021 )

SAMPLE TEMP	-.5 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: 4.54	NITRATE	: .35
CARBON	: 405	SILICATE	: 2.78
NITROGEN	: 47	PHOSPHATE	: .67

## JONES SOUND 1984

LAT	76 4.3' N	LONG	83 58.7' W	DATE	20/08/84	DEPTH	20 M
	P		P		P		P
427	.52	307	.43	259	.50	223	.57
183	.58	155	.59	130	.73	103	.77
85	.71	57	.84	53	.74	40	.78
35	.74	29	.76	26	.64	23	.63
21	.68	19	.67	18	.81	14	.69
11	.62	10	.52	9	.46	8	.43
6	.35	4	.28	4	.18	3	.15
2	.11	2	.10	1	.07	1	.07
.8	.05	.6	.01	.4	.02		

## PARAMETER VALUES

PS :	.84	ALPHA :	.080	BETA :	.0014
(	.81, .87 )	(	.074, .085 )	(	.0012, .0017 )

SAMPLE TEMP	-.9 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: 4.79	NITRATE	: 3.03
CARBON	: 289	SILICATE	: 10.98
NITROGEN	: 45	PHOSPHATE	: .57

## JONES SOUND 1984

LAT	76 4.3' N	LONG	83 58.7' W	DATE	20/08/84	DEPTH	25 M
I	P	I	P	I	P	I	P
427	.29	307	.30	259	.26	223	.41
183	.55	155	.66	136	.56	103	.61
85	.59	40	.59	35	.55	32	.65
29	.58	26	.54	23	.57	21	.52
19	.59	18	.49	14	.57	11	.44
10	.45	9	.38	8	.34	6	.24
4	.29	4	.16	3	.15	2	.10
2	.07	1	.05	1	.05	8	.03
.6	.03	.4	.02	.3	.00	.2	.00

## PARAMETER VALUES

PS :	.72	ALPHA :	.060	BETA :	.0016
(	.68, .75 )	(	.055, .065 )	(	.0013, .0020 )

SAMPLE TEMP	-1.0 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: 4.62	NITRATE	: 4.84
CARBON	: 302	SILICATE	: 17.21
NITROGEN	: 40	PHOSPHATE	: 1.08

## JONES SOUND 1984

LAT	76	4.3' N	LONG	83	58.7' W	DATE	20/08/84	DEPTH	50 M
I	P	I	P	I	P	I	P	I	P
307	.29	259	.37	223	.47	183	.56		
155	.64	136	.58	103	.69	85	.55		
73	.51	57	.58	53	.60	40	.66		
39	.61	35	.56	32	.67	19	.59		
18	.68	14	.61	11	.46	10	.45		
9	.39	8	.37	6	.25	4	.28		
4	.15	3	.15	2	.10	2	.10		
1	.04	1	.05	.8	.03	.6	.02		
.4	.00								

28

## PARAMETER VALUES

PS :	.71	ALPHA :	.069	BETA :	.0014
( .68, .75 )		( .063, .076 )		( .0011, .0018 )	

SAMPLE TEMP -1.0 C INCUBATION TEMP -1.0 C

CHLOROPHYLL :	1.24	NITRATE :	7.01
CARBON :	153	SILICATE :	23.83
NITROGEN :	18	PHOSPHATE :	.70

## JONES SOUND 1984

LAT	76 8.9' N	LONG	84 2.9' W	DATE	21/08/84	DEPTH	5 M
	P		P		P		P
399	1.03	319	.91	287	1.00	243	.94
155	.89	118	.93	84	.89	65	.91
56	.002	45	.90	26	.85	22	.63
22	.51	21	.48	20	.63	16	.62
12	.39	11	.43	11	.39	17	.17
7	.18	5	.35	4	.02	3	.03
1	.11	9	.18				

## PARAMETER VALUES

PS :	.96	ALPHA :	.045	BETA :	.0000
( .89, 1.03 )		( .041, .049 )		( -.0003, .0003 )	

SAMPLE TEMP	1.2 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: .17	NITRATE	: .36
CARBON	: 125	SILICATE	: 1.44
NITROGEN	: 13	PHOSPHATE	: .17

## JONES SOUND 1984

LAT	76 8.9' N	LONG	84 2.9' W	DATE	21/08/84	DEPTH	16 M
I	P	I	P	I	P	I	P
319	.41	287	.53	243	.55	203	.60
179	.62	155	.61	118	.67	100	.57
84	.68	76	.63	65	.66	56	.54
49	.61	38	.49	30	.55	26	.56
22	.54	22	.51	21	.56	16	.58
12	.53	11	.43	11	.59	8	.53
7	.29	5	.22	4	.13	3	.11
2	.07	2	.04	1	.05	1	.06

## PARAMETER VALUES

PS :	.64	ALPHA :	.059	BETA :	.0005
( .61, .67 )		( .054, .063 )		( .0003, .0007 )	

SAMPLE TEMP	.8 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: .94	NITRATE	: .41
CARBON	: 193	SILICATE	: 2.13
NITROGEN	: 24	PHOSPHATE	: .39

## JONES SOUND 1984

LAT	76 8.9' N	LONG	84 2.9' W	DATE	21/08/84	DEPTH	24 M
I	P	I	P	I	P	I	P
399	.46	319	.52	287	.42	243	.50
203	.49	179	.57	100	.58	84	.67
76	.69	65	.66	49	.64	38	.66
30	.61	26	.52	22	.53	22	.44
21	.48	20	.61	16	.58	12	.47
11	.46	11	.43	8	.37	7	.35
5	.28	4	.18	3	.15	2	.12
2	.07	1	.07	1	.06	.9	.03
.6	.03	.5	.03				

## PARAMETER VALUES

PS :	.68	ALPHA :	.062	BETA :	.0007
(	.65, .70 )	(	.057, .066 )	(	.0006, .0009 )

SAMPLE TEMP	-.4 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: 1.18	NITRATE	: 1.28
CARBON	: 163	SILICATE	: 5.23
NITROGEN	: 20	PHOSPHATE	: .54

## JONES SOUND 1984

LAT	76 8.9' N	LONG	84 2.9' W	DATE	21/08/84	DEPTH	39 M
I	P	I	P	I	P	I	P
399	.62	319	.66	287	.67	203	.73
179	.59	155	.69	100	.61	84	.67
76	.63	65	.59	56	.70	45	.60
38	.70	12	.68	11	.59	11	.50
8	.44	7	.37	5	.30	4	.22
33	.18	29	.12	6	.10	1	.08
1	.06	9	.02	6	.04	.5	.02
.4	.01						

32

## PARAMETER VALUES

PS :	.67	ALPHA :	.088	BETA :	.0001
( .64, .69 )		( .081, .095 )		( -.0001, .0002 )	

SAMPLE TEMP -1.0 C

INCUBATION TEMP -1.0 C

CHLOROPHYLL : 1.45

NITRATE : 4.34

CARBON : 226

SILICATE : 14.15

NITROGEN : 27

PHOSPHATE : .91

## JONES SOUND 1984

LAT	76 8.9' N	LONG	84 2.9' W	DATE	21/08/84	DEPTH	59 M
	P		P		P		P
399	.30	319	.40	287	.34	243	.49
203	.41	179	.46	118	.52	100	.54
84	.55	76	.53	65	.55	56	.59
49	.62	38	.57	30	.50	26	.49
22	.52	22	.51	21	.61	20	.51
16	.50	12	.30	11	.41	11	.32
8	.27	7	.28	5	.29	4	.15
3	.13	2	.08	2	.08	1	.04
1	.06	.9	.02	.6	.03	.3	.00

## PARAMETER VALUES

PS : .64                    ALPHA : .052                    BETA : .0012  
 ( .62, .67 )              ( .049, .055 )              ( .0010, .0013 )

SAMPLE TEMP	-1.0 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: .98	NITRATE	: 9.09
CARBON	: 152	SILICATE	: 28.98
NITROGEN	: 14	PHOSPHATE	: 1.07

## JONES SOUND 1984

LAT	76 8.9' N	LONG	84 2.9' W	DATE	21/08/84	DEPTH	80 M
I	P	I	P	I	P	I	P
399	.25	319	.27	287	.40	243	.62
203	.67	179	.73	155	.63	118	.77
100	.80	49	.79	45	.85	30	.52
26	.72	22	.60	22	.49	21	.53
20	.46	16	.63	12	.44	11	.47
11	.43	8	.32	7	.29	5	.24
4	.15	3	.12	2	.09	2	.06
1	.05	1	.03	.9	.03	.6	.00
.5	.00						

34

## PARAMETER VALUES

PS :	1.18	ALPHA :	.042	BETA :	.0041
(	1.05, 1.30 )	(	.040, .045 )	(	.0030, .0051 )

SAMPLE TEMP	-1.0 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL :	.94	NITRATE :	7.46
CARBON :	111	SILICATE :	23.24
NITROGEN :	11	PHOSPHATE :	.70

## JONES SOUND 1984

LAT	76 17.6' N	LONG	88 32.9' W	DATE	24/08/84	DEPTH	25 M
I	P	I	P	I	P	I	P
813	.03	805	.07	706	.03	626	.05
470	.02	391	.13	327	.14	255	.45
215	.52	183	.40	175	.60	151	.51
148	.65	128	.73	104	.48	85	.79
81	.63	64	.58	60	.55	48	.83
46	.71	39	.70	28	.78	28	.79
22	.69	21	.65	16	.65	15	.53
12	.43	12	.51	9	.31	8	.33
6	.27	5	.24	5	.15	4	.15
3	.08	3	.08	2	.06		

## PARAMETER VALUES

PS :	.97	ALPHA :	.056	BETA :	.0039
(	.89, 1.05 )	(	.051, .062 )	(	.0031, .0048 )

SAMPLE TEMP	-.5 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: 7.01	NITRATE	: 3.21
CARBON	: 396	SILICATE	: 14.75
NITROGEN	: 65	PHOSPHATE	: .81

## JONES SOUND 1984

LAT	76 11.8' N	LONG	87 20.3' W	DATE	25/08/84	DEPTH	25 M
	P		P		P		P
817	.14	726	.06	618	.06	423	.09
407	.40	311	.36	303	.26	255	1.01
223	.97	191	.88	183	1.49	175	1.47
151	1.29	128	1.48	59	1.29	33	1.43
31	1.54	24	1.43	24	1.34	16	1.22
16	1.18	12	.89	12	1.01	95	.64
9	.76	7	.46	7	.50	5	.32
5	.29	4	.28	3	.19	2	.13
2	.13	2	.09				

## PARAMETER VALUES

PS :	2.89	ALPHA :	.088	BETA :	.0150
(	2.41, 3.37 )	(	.081, .096 )	(	.0102, .0199 )

SAMPLE TEMP	- .5 C	INCUBATION TEMP	- 1.0 C
CHLOROPHYLL	: 3.42	NITRATE	: 3.98
CARBON	: 276	SILICATE	: 14.84
NITROGEN	: 29	PHOSPHATE	: 1.01

## JONES SOUND 1984

LAT	76 12.4' N	LONG	83 53.7' W	DATE	26/08/84	DEPTH	10 M
I	P	I	P	I	P	I	P
311	.23	267	.27	227	.30	195	.42
167	.48	97	.60	88	.58	61	.48
53	.53	49	.53	33	.55	21	.45
19	.59	16	.43	14	.33	14	.53
12	.48	12	.34	10	.30	99	.35
7	.32	6	.29	3	.03	2	.05
2	.01	9	.09	1	.10	.5	.02
.2	.05	.1	.04				

## PARAMETER VALUES

PS :	.68	ALPHA :	.051	BETA :	.0020
( .63, .74 )		( .046, .056 )		( .0015, .0026 )	

SAMPLE TEMP	1.2 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: .27	NITRATE	: .04
CARBON	: 100	SILICATE	: 4.11
NITROGEN	: 20	PHOSPHATE	: .33

## JONES SOUND 1984

LAT	76 12.4' N	LONG	83 53.7' W	DATE	26/08/84	DEPTH	23 M
I	P	I	P	I	P	I	P
383	.32	311	.34	227	.53	195	.57
167	.44	140	.43	97	.58	88	.51
53	.59	49	.54	42	.60	33	.55
26	.55	21	.46	19	.51	14	.59
14	.51	12	.49	12	.42	10	.39
9	.41	7	.33	6	.32	0	.22
3	.20	2	.17	2	.09	0	.11
1	.10	8	.04	6	.03	5	.10
.3	.08	:2	.04	:1	.04		

## PARAMETER VALUES

PS :	.60	ALPHA :	.074	BETA :	.0008
(	.58, .63 )	(	.068, .080 )	(	.0006, .0010 )

SAMPLE TEMP	- .7 C	INCUBATION TEMP	- 1.0 C
CHLOROPHYLL	: 1.21	NITRATE	: .04
CARBON	: 310	SILICATE	: 2.91
NITROGEN	: 33	PHOSPHATE	: .39

## JONES SOUND 1984

LAT	76 12.4' N	LONG	83 53.7' W	DATE	26/08/84	DEPTH	30 M
I	P	I	P	I	P	I	P
383	.28	311	.23	267	.30	227	.33
195	.39	167	.38	140	.36	124	.59
88	.67	78	.78	68	.68	61	.92
53	.79	42	.93	33	.69	26	.70
21	.64	19	.50	16	.77	14	.84
14	.77	12	.81	12	.74	10	.75
99	.68	7	.67	6	.33	5	.36
22	.26	2	.20	2	.24	1	.09
.8	.12	.6	.04	.5	.10	.3	.05
.2	.02	.1	.04				

## PARAMETER VALUES

PS :	.92	ALPHA :	.126	BETA :	.0038
( .86, .98 )		( .111, .141 )		( .0030, .0046 )	

SAMPLE TEMP	-.8 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: 1.56	NITRATE	: .08
CARBON	: 314	SILICATE	: 2.85
NITROGEN	: 34	PHOSPHATE	: .52

## JONES SOUND 1984

LAT	76 12.4' N	LONG	83 53.7' W	DATE	26/08/84	DEPTH	35 M
	P		P		P		P
383	.16	311	.14	267	.19	227	.17
195	.36	167	.21	124	.50	97	.38
78	.50	53	.45	42	.56	33	.45
26	.52	21	.49	19	.43	16	.49
14	.46	12	.48	12	.48	10	.52
9	.41	7	.39	6	.39	5	.25
3	.19	2	.13	2	.10	2	.09
1	.08	8	.05	.6	.03	.5	.02
.3	.03	.2	.02	.1	.02		

## PARAMETER VALUES

PS :	.59	ALPHA :	.084	BETA :	.0023
( .56, .62 )		( .076, .092 )		( .0019, .0027 )	

SAMPLE TEMP	- .9 C	INCUBATION TEMP	- 1.0 C
CHLOROPHYLL	: 2.01	NITRATE	: 3.04
CARBON	: 284	SILICATE	: 11.68
NITROGEN	: 30	PHOSPHATE	: .87

## JONES SOUND 1984

LAT	76 12.4' N	LONG	83 53.7' W	DATE	26/08/84	DEPTH	45 M
I	P	I	P	I	P	I	P
510	.54	383	.30	311	.21	267	.35
195	.45	124	.37	88	.61	78	.89
21	1.87	19	1.49	16	1.85	12	1.25
9	1.69	7	1.17	6	.84	5	.76
3	.68	2	.58	2	.63	1	.32
.8	.15	.6	.13	.5	.23	.3	.11
.2	.09						

## PARAMETER VALUES

PS : 2.79	ALPHA : .209	BETA : .0187
( 2.39, 3.20 )	( .186, .232 )	( .0127, .0246 )

SAMPLE TEMP	-1.0 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL :	.75	NITRATE :	6.15
CARBON :	163	SILICATE :	19.22
NITROGEN :	22	PHOSPHATE :	.67

## JONES SOUND 1984

LAT 75 48.5' N		LONG 85 13.5' W		DATE 27/08/84		DEPTH	5 M
I	P	I	P	I	P	I	P
387	1.12	343	.93	287	1.26	235	1.65
199	1.57	148	1.64	132	1.57	107	1.47
65	1.32	57	1.39	49	1.22	45	1.43
43	1.30	34	1.37	26	1.32	22	1.05
18	.88	15	.88	15	.83	14	.51
14	.71	12	.76	11	.57	9	.41
8	.38	7	.23	5	.19	2	.11
2	.07	2	.05	5	.05	0	.04
.7	.01	.6	.02	.5	.02	.3	.02
.2	.01	.1	.02				

## PARAMETER VALUES

PS : 1.86	ALPHA : .065	BETA : .0024
( 1.73, 2.00 )	( .060, .069 )	( .0017, .0032 )

SAMPLE TEMP	-.3 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: 1.35	NITRATE	: .28
CARBON	: 197	SILICATE	: 6.19
NITROGEN	: 26	PHOSPHATE	: .28

## JONES SOUND 1984

LAT	75 48.5' N	LONG	85 13.5' W	DATE	27/08/84	DEPTH	15 M
I	P	I	P	I	P	I	P
387	.96	343	1.08	287	1.04	235	1.20
199	1.19	171	1.27	148	1.14	107	1.93
86	.93	74	1.18	65	1.01	57	1.04
49	1.03	45	1.24	43	1.15	34	1.00
26	1.06	22	.90	18	.84	15	.76
15	.87	14	.55	14	.69	11	.49
9	.38	8	.31	7	.23	5	.23
2	.12	2	.05	2	.07	.9	.06
.9	.02	.2	.01	.6	.02	.5	.01
.3	.01	.2	.01	.1	.02		

## PARAMETER VALUES

PS :	1.17	ALPHA :	.070	BETA :	.0003
(	1.11, 1.22 )	(	.064, .075 )	(	.0000, .0006 )

SAMPLE TEMP	-.2 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: 3.59	NITRATE	: .20
CARBON	: 343	SILICATE	: 5.30
NITROGEN	: 42	PHOSPHATE	: .34

## JONES SOUND 1984

LAT	75 48.5' N	LONG	85 13.5' W	DATE	27/08/84	DEPTH	22 M
I	P	I	P	I	P	I	P
387	.41	343	.41	287	.41	235	.53
199	.60	171	.61	148	.64	107	.68
86	.62	74	.73	65	.78	57	.66
49	.68	45	.74	34	.73	26	.78
22	.63	18	.67	15	.65	15	.57
14	.60	14	.52	11	.46	9	.36
8	.29	7	.28	5	.24	2	.12
2	.06	2	.07	.9	.04	.9	.05
.7	.03	.6	.02	.5	.02	.3	.01
.2	.01	.1	.01				

## PARAMETER VALUES

PS :	.84	ALPHA :	.064	BETA :	.0017
( .81, .87 )		( .061, .068 )		( .0015, .0019 )	

SAMPLE TEMP	- .2 C	INCUBATION TEMP	- 1.0 C
CHLOROPHYLL	: 9.47	NITRATE	: .89
CARBON	: 532	SILICATE	: 3.84
NITROGEN	: 65	PHOSPHATE	: .39

## JONES SOUND 1984

LAT	75 48.5' N	LONG	85 13.5' W	DATE	27/08/84	DEPTH	40 M
I	P	I	P	I	P	I	P
387	.31	343	.38	287	.46	235	.51
199	.46	171	.57	148	.54	86	.66
74	.61	65	.65	57	.64	49	.64
45	.58	34	.57	26	.68	22	.63
18	.53	15	.63	14	.56	11	.45
9	.44	8	.37	7	.33	5	.34
22	.21	2	.14	2	.15	9	.13
.9	.08	7	.05	.6	.03	.5	.05
.3	.03	:2	.02	.1	.02		

## PARAMETER VALUES

PS : .69                    ALPHA : .081                    BETA : .0011  
      ( .67, .71 )           ( .076, .087 )           ( .0010, .0013 )

SAMPLE TEMP	- .7 C	INCUBATION TEMP	- 1.0 C
CHLOROPHYLL	: 4.58	NITRATE	: 5.86
CARBON	: 310	SILICATE	: 16.43
NITROGEN	: 30	PHOSPHATE	: .66

## JONES SOUND 1984

LAT	75 48.5' N	LONG	85 13.5' W	DATE	27/08/84	DEPTH	55 M
I	P	I	P	I	P	I	P
387	.20	343	.28	287	.35	235	.40
199	.49	171	.50	132	.52	107	.45
86	.43	74	.48	65	.46	57	.50
49	.51	43	.42	34	.50	26	.48
22	.50	18	.45	15	.46	14	.49
14	.43	12	.53	11	.42	9	.37
8	.32	7	.26	5	.24	2	.18
2	.13	2	.13	.9	.10	.9	.07
.7	.09	.6	.03	.5	.09	.3	.02
.2	.01	.1	.02				

## PARAMETER VALUES

PS :	.53	ALPHA :	.077	BETA :	.0008
( .51, .55 )		( .070, .084 )		( .0006, .0010 )	

SAMPLE TEMP	- .7 C	INCUBATION TEMP	- 1.0 C
CHLOROPHYLL	: 2.97	NITRATE	: 8.19
CARBON	: 172	SILICATE	: 22.69
NITROGEN	: 18	PHOSPHATE	: .65

## JONES SOUND 1984

LAT	75 48.0' N	LONG	86 2.2' W	DATE	28/08/84	DEPTH	5 M
I	P	I	P	I	P	I	P
387	.36	299	.36	255	.42	215	.53
167	.62	155	.71	140	.62	101	.67
65	.70	52	.78	22	.69	18	.69
15	.62	14	.63	13	.61	12	.60
11	.63	10	.45	8	.38	7	.26
5	.27	5	.30	3	.19	2	.14
2	.09	1	.10	.9	.03	.6	.00
.4	.01	.3	.01	.2	.03	.1	.00

## PARAMETER VALUES

PS :	.91	ALPHA :	.075	BETA :	.0024
( .86, .96 )		( .070, .079 )		( .0020, .0028 )	

SAMPLE TEMP	1.0 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL :	2.81	NITRATE :	.11
CARBON :	252	SILICATE :	1.36
NITROGEN :	31	PHOSPHATE :	.21

## JONES SOUND 1984

LAT	75 48.0' N	LONG	86 2.2' W	DATE	28/08/84	DEPTH	15 M
I	P	I	P	I	P	I	P
387	.47	299	.38	255	.45	215	.39
167	.58	155	.71	136	.80	101	.76
80	.70	73	.83	65	.81	52	.78
44	.87	39	.80	26	.94	22	.86
18	.90	15	.88	14	.81	13	.60
12	.76	11	.71	10	.43	8	.51
7	.44	5	.30	5	.33	3	.16
2	.13	2	.10	1	.10	9	.06
.6	.03	.6	.02	.4	.01	3	.02
.2	.02	.1	.03				

## PARAMETER VALUES

PS :	1.01	ALPHA :	.097	BETA :	.0030
(	.96, 1.06 )	(	.090, .105 )	(	.0024, .0035 )

SAMPLE TEMP	-.5 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: 3.22	NITRATE	: .16
CARBON	: 316	SILICATE	: 1.34
NITROGEN	: 42	PHOSPHATE	: .21

## JONES SOUND 1984

LAT	75 48.0' N	LONG	86 2.2' W	DATE	28/08/84	DEPTH	20 M
	P		P		P		P
299	.24	255	.31	215	.46	167	.60
155	.63	140	.68	101	.80	80	.75
73	.71	65	.79	52	.73	44	.80
39	.71	31	.88	26	.81	22	.81
18	.72	15	.72	14	.65	13	.56
12	.71	11	.71	10	.53	8	.41
7	.40	5	.33	5	.27	3	.19
2	.13	2	.10	1	.08	9	.05
.6	.04	.6	.02	.4	.02	.3	.02
.2	.01	.1	.01				

## PARAMETER VALUES

PS :	1.00	ALPHA :	.085	BETA :	.0037
(	.95, 1.04 )	(	.080, .090 )	(	.0031, .0042 )

SAMPLE TEMP	-.6 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: 6.55	NITRATE	: .15
CARBON	: 471	SILICATE	: 2.18
NITROGEN	: 56	PHOSPHATE	: .42

## JONES SOUND 1984

LAT	75 48.0' N	LONG	86 2.2' W	DATE	28/08/84	DEPTH	30 M
I	P	I	P	I	P	I	P
387	.35	299	.39	255	.32	215	.33
167	.45	140	.33	136	.35	101	.49
73	.48	65	.50	52	.51	44	.50
31	.47	14	.47	13	.50	10	.46
8	.41	7	.33	5	.23	5	.26
3	.12	2	.10	2	.05	1	.06
.9	.04	.6	.03	.6	.02	.4	.01
.3	.01	.2	.00				

## PARAMETER VALUES

PS : .53                  ALPHA : .076                  BETA : .0009  
 ( .51, .56 )                  ( .069, .083 )                  ( .0007, .0011 )

SAMPLE TEMP	- .8 C	INCUBATION TEMP	- 1.0 C
CHLOROPHYLL	: 7.14	NITRATE	: .65
CARBON	: 380	SILICATE	: 2.17
NITROGEN	: 41	PHOSPHATE	: .30

## JONES SOUND 1984

LAT	75 48.0' N	LONG	86 2.2' W	DATE	28/08/84	DEPTH	50 M
	P		P		P		P
387	.23	299	.14	255	.29	215	.33
167	.37	155	.29	140	.37	101	.53
80	.51	73	.52	65	.53	52	.56
44	.57	43	.55	39	.56	31	.53
26	.61	22	.49	18	.51	15	.50
14	.56	13	.42	12	.43	11	.52
10	.39	8	.38	7	.33	5	.25
5	.30	3	.16	2	.12	2	.10
1	.10	9	.07	6	.04	.6	.02
.4	.04	3	.02	2	.00	.1	.01

## PARAMETER VALUES

PS :	.66	ALPHA :	.071	BETA :	.0024
( .64, .68 )		( .067, .076 )		( .0021, .0026 )	

SAMPLE TEMP	-1.0 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: 2.93	NITRATE	: 5.69
CARBON	: 192	SILICATE	: 15.96
NITROGEN	: 25	PHOSPHATE	: .67

## JONES SOUND 1984

LAT	75 52.5' N	LONG	84 37.8' W	DATE	29/08/84	DEPTH	14 M
I	P	I	P	I	P	I	P
777	.16	698	.11	518	.18	399	.19
323	.29	303	.25	259	.27	207	.44
207	.57	171	.36	136	.70	128	.75
85	.87	84	.82	65	.83	59	.93
48	.92	45	.84	36	.85	31	.97
26	.96	22	.76	20	.76	14	.66
14	.66	10	.64	10	.56	8	.43
7	.37	6	.46	10	.31	4	.23
3	.18	3	.13	3	.12	2	.08
2	.06	1	.07				

## PARAMETER VALUES

PS :	1.20	ALPHA :	.074	BETA :	.0055
(	1.13, 1.26 )	(	.070, .079 )	(	.0047, .0062 )

SAMPLE TEMP	-.5 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: 4.00	NITRATE	: .68
CARBON	: 305	SILICATE	: 6.85
NITROGEN	: 35	PHOSPHATE	: .43

## JONES SOUND 1984

LAT	75 49.2' N	LONG	86 58.0' W	DATE	30/08/84	DEPTH	19 M
I	P	I	P	I	P	I	P
757	.16	606	.49	518	.23	478	.49
458	.18	359	.75	335	.66	255	1.29
247	.82	219	1.17	195	1.21	155	1.45
144	1.45	120	1.46	104	1.37	90	1.54
82	1.43	81	1.57	75	1.53	61	1.60
46	1.63	41	1.62	31	1.63	31	1.64
24	1.67	21	1.46	19	1.52	16	1.33
14	1.37	12	1.05	9	1.04	8	.81
7	.73	6	.60	5	.54	4	.39
4	.44	3	.29	3	.18	2	.12
2	.11	1	.07				

## PARAMETER VALUES

PS : 2.04	ALPHA : .139	BETA : .0062
( 1.96, 2.12 )	( .130, .148 )	( .0055, .0069 )

SAMPLE TEMP	- .3 C	INCUBATION TEMP	- 1.0 C
CHLOROPHYLL :	6.02	NITRATE :	.43
CARBON :	421	SILICATE :	4.80
NITROGEN :	42	PHOSPHATE :	.44

## JONES SOUND 1984

LAT	76 10.4' N	LONG	83 54.1' W	DATE	01/09/84	DEPTH	5 M
I	P	I	P	I	P	I	P
351	.25	307	.59	247	.66	215	1.00
171	1.49	108	1.49	69	1.28	62	1.50
57	1.34	49	1.29	42	1.54	21	1.19
12	.52	11	.83	8	.38	7	.44
6	.37	3	.25				

## PARAMETER VALUES

PS :	2.57	ALPHA :	.066	BETA :	.0124
(	1.96, 3.18 )	(	.056, .075 )	(	.0065, .0182 )

SAMPLE TEMP	-	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: .50	NITRATE	: .08
CARBON	: 155	SILICATE	: 4.05
NITROGEN	: 16	PHOSPHATE	: .48

## JONES SOUND 1984

LAT	76 10.4' N	LONG	83 54.1' W	DATE	01/09/84	DEPTH	20 M
I	P	I	P	I	P	I	P
447	1.47	307	1.38	247	1.39	187	1.27
128	1.38	108	1.11	69	1.25	57	1.25
42	1.30	25	1.20	17	1.20	14	1.14
12	.76	11	1.19	9	.72	8	.85
7	.58						

## PARAMETER VALUES

PS : 1.32	ALPHA : .147	BETA : .0000
( 1.24, 1.39 )	( .128, .165 )	( -.0003, .0003 )

SAMPLE TEMP	-	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: .73	NITRATE	: .09
CARBON	: 163	SILICATE	: 3.33
NITROGEN	: 19	PHOSPHATE	: .45

## JONES SOUND 1984

LAT	76 10.4' N	LONG	83 54.1' W	DATE	01/09/84	DEPTH	25 M
I	P	I	P	I	P	I	P
351	.69	307	1.07	215	1.20	187	1.34
171	1.20	148	1.34	128	1.54	90	1.60
49	1.49	42	1.57	32	1.10	21	1.61
18	1.06	17	.98	14	1.39	12	.68
9	.75	8	.78	7	.70	6	.34
5	.62	3	.17	2	.16	1	.21

## PARAMETER VALUES

PS :	1.84	ALPHA :	.110	BETA :	.0039
(	1.65, 2.02 )	(	.098, .123 )	(	.0024, .0053 )

SAMPLE TEMP	-	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: 1.95	NITRATE	: .09
CARBON	: 218	SILICATE	: 2.02
NITROGEN	: 24	PHOSPHATE	: .32

## JONES SOUND 1984

LAT	76 10.4' N	LONG	83 54.1' W	DATE	01/09/84	DEPTH	31 M
I	P	I	P	I	P	I	P
351	.20	307	.33	247	.37	215	.37
187	.39	171	.44	95	.46	90	.54
76	.45	69	.53	62	.44	57	.52
49	.52	42	.55	25	.54	21	.47
17	.58	14	.40	11	.43	9	.53
8	.38	7	.37	6	.24	5	.17
3	.13	2	.09	2	.08	1	.07
.9	.09	.6	.06	.4	.02	.2	.09

## PARAMETER VALUES

PS :	.59	ALPHA :	.072	BETA :	.0013
( .56, .62 )	.	( .065, .078 )	.	( .0010, .0016 )	.

SAMPLE TEMP	-	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: 6.15	NITRATE	: 1.59
CARBON	: 372	SILICATE	: 5.40
NITROGEN	: 48	PHOSPHATE	: .79

## JONES SOUND 1984

LAT	76 34.4' N	LONG	84 56.0' W	DATE	02/09/84	DEPTH	15 M
I	P	I	P	I	P	I	P
478	1.99	319	2.03	207	2.13	73	1.96
45	2.18	32	2.10	23	2.05	16	1.58
9	1.40	8	1.00	7	.92	4	.59
3	.52						

## PARAMETER VALUES

PS : 2.19	ALPHA : .191	BETA : .0005
( 2.10, 2.28 )	( .176, .206 )	( .0001, .0008 )

SAMPLE TEMP	- .5 C	INCUBATION TEMP	- 1.0 C
CHLOROPHYLL :	1.12	NITRATE :	.85
CARBON :	289	SILICATE :	6.48
NITROGEN :	22	PHOSPHATE :	.26

## JONES SOUND 1984

LAT	74 36.4' N	LONG	84 56.0' W	DATE	02/09/84	DEPTH	25 M
I	P	I	P	I	P	I	P
319	.15	287	.58	251	1.52	171	3.59
124	3.94	96	4.20	81	3.93	73	3.30
65	3.45	45	3.09	40	3.06	32	2.28
23	3.10	21	3.07	17	3.44	15	1.31
12	1.73	8	2.27	7	1.78	4	.43
3	.85	2	.61	2	.41	.6	.35
.2	.46						

## PARAMETER VALUES

PS : 9.59	ALPHA : .165	BETA : .0714
( 3.84, 15.34 )	( .140, .189 )	( .0011, .1417 )

SAMPLE TEMP	-1.0 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL :	.33	NITRATE :	1.24
CARBON :	186	SILICATE :	10.33
NITROGEN :	8	PHOSPHATE :	.62

## JONES SOUND 1984

LAT	74 34.4' N	LONG	84 56.0' W	DATE	02/09/84	DEPTH	5 M
I	P	I	P	I	P	I	P
319	1.67	287	1.41	207	1.91	171	1.47
148	2.01	124	1.84	96	1.97	73	2.01
65	2.19	53	1.75	45	1.73	43	1.76
40	1.48	32	2.04	27	1.42	23	1.78
21	1.25	18	1.62	17	1.85	16	1.90
15	2.02	11	1.98	8	2.09	7	.80
4	.60	2	.25	1	.05	.8	.09

## PARAMETER VALUES

PS : 1.87	ALPHA : .310	BETA : .0008
( 1.75, 1.99 )	( .240, .380 )	( -.0002, .0018 )

SAMPLE TEMP	-.5 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL :	2.60	NITRATE :	.05
CARBON :	466	SILICATE :	5.27
NITROGEN :	42	PHOSPHATE :	.01

## JONES SOUND 1984

LAT	76 34.5' N	LONG	84 56.0' W	DATE	02/09/84	DEPTH	5 M
I	P	I	P	I	P	I	P
319	2.13	287	2.10	251	2.13	207	2.31
171	1.53	148	1.85	124	1.60	124	2.12
96	2.43	73	2.44	53	1.93	45	2.27
43	2.39	40	2.59	32	2.04	27	1.88
23	2.50	21	1.56	18	1.61	17	2.40
16	2.27	15	2.05	11	1.67	9	1.87
8	1.74	4	.53	3	.16	2	.14
2	.01	2	.05	1	.10	.8	.06
.1	.04						

61

## PARAMETER VALUES

PS : 2.30	ALPHA : .255	BETA : .0012
( 2.14, 2.46 )	( .213, .296 )	( .0001, .0023 )

SAMPLE TEMP	- .5 C	INCUBATION TEMP	- 1.0 C
CHLOROPHYLL :	3.88	NITRATE :	.09
CARBON :	448	SILICATE :	5.07
NITROGEN :	48	PHOSPHATE :	.06

## JONES SOUND 1984

LAT 76 34.5' N		LONG 84 56.0' W		DATE 02/09/84		DEPTH 16 M	
I	P	I	P	I	P	I	P
478	.42	319	.63	207	.96	171	.88
81	1.06	65	1.21	53	.94	43	1.24
40	1.09	32	1.11	27	.74	21	1.06
18	1.06	16	.25	9	.41	7	.45
4	.19						

62

## PARAMETER VALUES

PS : 1.41	ALPHA : .064	BETA : .0034
( 1.18, 1.65 )	( .052, .076 )	( .0017, .0052 )

SAMPLE TEMP	-.5 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL :	2.31	NITRATE :	1.76
CARBON :	244	SILICATE :	11.96
NITROGEN :	26	PHOSPHATE :	.49

## JONES SOUND 1984

LAT	76 34.5' N	LONG	84 56.0' W	DATE	02/09/84	DEPTH	25 M
	P		P		P		P
319	.41	287	.44	251	.49	207	.74
171	1.09	148	.62	81	1.51	73	1.30
53	1.70	45	1.57	27	1.12	23	.95
17	1.24	16	1.49	15	.96	12	1.14
9	.58	8	1.02	7	.62	4	.31
3	.55	2	.15	2	.37	2	.22
1	.25	.8	.04	.5	.18	.3	.02

## PARAMETER VALUES

PS : 2.07	ALPHA : .118	BETA : .0108
( 1.80, 2.34 )	( .104, .132 )	( .0075, .0142 )

SAMPLE TEMP -1.0 C

INCUBATION TEMP -1.0 C

CHLOROPHYLL : .23

NITRATE : 2.64

CARBON : 176

SILICATE : 14.86

NITROGEN : 14

PHOSPHATE : .89

## JONES SOUND 1984

LAT	76 20.8' N	LONG	89 4.9' W	DATE	03/09/84	DEPTH	50 M
I	P	I	P	I	P	I	P
331	1.21	283	1.78	251	2.77	211	2.36
140	2.14	124	2.88	98	2.83	77	2.23
58	2.53	50	2.23	44	2.92	42	2.69
37	2.82	29	2.85	23	2.15	18	1.84
14	1.47	14	2.13	12	1.69	10	1.38
10	1.83	9	1.90	9	.84	7	1.76
6	1.21	5	.61	4	.96	3	.61
2	.46	2	.30	1	.61	.9	.37
.7	.03	.6	.16	.5	.18	.3	.17
.2	.14						

## PARAMETER VALUES

PS : 2.95	ALPHA : .225	BETA : .0043
( 2.74, 3.15 )	( .202, .248 )	( .0027, .0059 )

SAMPLE TEMP -1.8 C

INCUBATION TEMP -1.5 C

CHLOROPHYLL : .17

NITRATE : 9.44

CARBON : 94

SILICATE : 26.61

NITROGEN : 12

PHOSPHATE : 1.38

## JONES SOUND 1984

LAT	76 20.8' N	LONG	89 4.9' W	DATE	03/09/84	DEPTH	0 M
I	P	I	P	I	P	I	P
458	.49	331	.43	283	.41	251	.78
211	.55	175	.90	155	1.14	124	1.57
77	1.41	70	1.60	44	1.51	42	1.38
23	1.37	10	.81	39	1.13	29	1.45
5	.55	4	1.05	33	.51	22	.97
2	.25	1	.48	9	.17	7	.36
.6	.65	.5	.46	1	.68		

## PARAMETER VALUES

PS : 1.70	ALPHA : .265	BETA : .0056
( 1.49, 1.90 )	( .207, .322 )	( .0035, .0078 )

SAMPLE TEMP	-1.6 C	INCUBATION TEMP	-1.5 C
CHLOROPHYLL :	.39	NITRATE :	4.75
CARBON :	63	SILICATE :	16.76
NITROGEN :	7	PHOSPHATE :	.87



**Light Saturation Data for Oxygen Experiments  
and Related Biomass and Nutrient Measurements**



## Units

$$P = \text{mg O}_2 \text{ m}^{-3} \text{ h}^{-1} (\text{mg chl})^{-1}$$

$$I = \text{W m}^{-2}$$

$$P_s = \text{mg O}_2 \text{ mg Chl}^{-1} \text{ h}^{-1}$$

$$\alpha = \text{mg O}_2 (\text{mg Chl})^{-1} \text{ h}^{-1} \text{ w}^{-1} \text{ m}^{-2}$$

$$\beta = \text{mg O}_2 (\text{mg Chl})^{-1} \text{ h}^{-1} \text{ w}^{-1} \text{ m}^{-2}$$

Organic particulates are in mg m<sup>-3</sup> and inorganic nutrients in mg at m<sup>-3</sup>. The 90% confidence interval for P<sub>s</sub>, α and β are shown in the closed brackets below the estimates for each parameter.



## JONES SOUND 1984

<u>LAT 76 22.5' N</u>		<u>LONG 83 6.6' W</u>		<u>DATE 23/08/84</u>		<u>DEPTH</u>	<u>42 M</u>
I	P	I	P	I	P	I	P
606	1.75	431	2.31	375	.88	303	3.30
291	1.50	199	6.90	179	6.27	151	5.71
92	9.90	60	10.64	41	7.52	28	8.68
27	8.35	22	8.46	20	8.97	15	10.36
15	5.17	12	7.34	11	3.79	8	5.32
8	5.69	6	4.22	5	3.46	5	4.12
4	1.21	2	2.95	1	.66		

## PARAMETER VALUES

PS : 12.80 ( 11.09, 14.50 )	ALPHA : .797 ( .696, .899 )	BETA : .0579 ( .0397, .0760 )
--------------------------------	--------------------------------	----------------------------------

SAMPLE TEMP	-.9 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL :	4.87	NITRATE :	6.92
CARBON :	323	SILICATE :	19.58
NITROGEN :	46	PHOSPHATE :	1.11

## JONES SOUND 1984

LAT	76 17.6' N	LONG	88 32.9' W	DATE	24/08/84	DEPTH	25 M
I	P	I	P	I	P	I	P
383	.11	291	1.55	251	1.27	223	2.21
187	3.19	140	4.54	124	4.53	120	4.97
112	5.08	58	5.49	42	4.02	26	4.52
26	5.23	18	3.91	14	3.35	10	1.69
10	3.92	8	1.73	6	2.26	5	1.40
5	1.88	3	1.34	2	2.27	2	.36

72

## PARAMETER VALUES

PS : 9.95	ALPHA : .323	BETA : .0647
( 7.62, 12.28 )	( .285, .360 )	( .0351, .0943 )

SAMPLE TEMP	- .5 C	INCUBATION TEMP	- 1.0 C
CHLOROPHYLL	: 6.92	NITRATE	: 3.21
CARBON	: 396	SILICATE	: 14.75
NITROGEN	: 65	PHOSPHATE	: .81

## JONES SOUND 1984

LAT	75 52.5' N	LONG	84 37.8' W	DATE	29/08/84	DEPTH	14 M
	P		P		P		P
347	2.12	303	1.13	243	.78	219	3.61
155	5.48	148	5.64	120	7.02	86	5.58
84	5.38	76	5.21	64	6.93	58	5.89
42	5.37	15	5.99	11	3.69	88	5.61
8	3.67	62	5.05	6	2.81	32	2.19
3	2.90	2	1.65	2	.39	2	.45

73

## PARAMETER VALUES

PS : 7.99	ALPHA : .827	BETA : .0323
( 7.05, 8.93 )	( .693, .960 )	( .0209, .0438 )

SAMPLE TEMP	-.5 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL :	3.22	NITRATE :	.68
CARBON :	305	SILICATE :	6.85
NITROGEN :	35	PHOSPHATE :	.43

## JONES SOUND 1984

LAT	75 49.2' N	LONG	86 58.0' W	DATE	30/08/84	DEPTH	19 M
	P		P		P		P
526	.56	431	.56	379	1.40	335	2.35
299	1.44	243	2.80	203	3.80	203	3.90
183	4.34	148	5.10	140	5.53	108	4.80
96	6.06	89	6.04	78	5.23	63	4.54
46	5.04	33	4.40	28	4.84	25	5.70
20	5.21	14	4.97	12	4.45	8	4.31
8	3.67	6	3.61	6	2.99	4	2.61
4	2.33	3	2.06	3	1.77	2	1.35
2	.86	1	.77				

## PARAMETER VALUES

PS : 6.60                  ALPHA : .716                  BETA : .0211  
 ( 6.20, 7.01 )                  ( .640, .791 )                  ( .0172, .0250 )

SAMPLE TEMP	-.3 C	INCUBATION TEMP	-1.0 C
CHLOROPHYLL	: 6.19	NITRATE	: .43
CARBON	: 421	SILICATE	: 4.80
NITROGEN	: 42	PHOSPHATE	: .44

**Total Radiation**

Totals are in  $\text{W m}^{-2}$  for each hour ending at hour indicated.

All times are Atlantic Daylight Time.



JONES SOUND  
TOTAL RADIATION

	17/8	18/8	19/8	20/8	21/8	22/8	23/8	24/8	25/8	26/8	27/8	28/8	29/8
0000	-	11	20	24	35	20	17	21	5	7	9	3	4
0100	-	2	9	13	9	8	7	6	3	2	2	0	0
0200	-	0	5	4	3	3	2	2	0	0	0	0	0
0300	-	0	3	3	2	2	0	0	0	0	0	0	0
0400	-	1	3	2	2	2	1	0	0	0	0	0	0
0500	-	4	6	3	7	4	2	3	0	0	0	0	0
0600	-	7	13	9	40	9	7	9	0	3	4	2	0
0700	-	12	28	20	54	35	19	37	2	14	12	8	4
0800	-	30	68	37	60	108	33	95	7	31	27	26	14
0900	-	55	110	86	113	172	73	118	15	45	43	81	30
1000	-	119	135	217	193	240	129	100	25	67	76	106	70
1100	71	183	136	272	261	241	116	58	66	143	138	93	70
1200	99	163	122	317	299	235	251	47	74	259	212	108	114
1300	104	186	146	362	324	287	223	68	83	295	193	143	136
1400	60	246	318	228	330	326	271	91	81	235	323	148	115
1500	82	213	285	305	361	270	152	83	90	180	323	102	111
1600	92	201	387	308	314	281	184	67	141	237	265	160	164
1700	94	141	308	317	293	330	153	96	150	273	182	196	197
1800	83	141	261	287	234	201	118	120	128	233	189	262	254
1900	60	84	128	261	241	160	65	101	85	209	248	193	204
2000	61	74	127	192	175	161	63	55	62	200	105	120	86
2100	62	68	102	130	145	94	55	37	74	145	43	79	53
2200	32	40	84	112	104	54	41	18	89	86	17	21	24
2300	20	24	101	35	48	36	44	10	21	25	7	14	10

JONES SOUND  
TOTAL RADIATION

	30/8	31/8	1/9	2/9	3/9	4/9
0000	2	3	3	7	0	0
0100	0	0	0	0	0	0
0200	0	0	0	0	0	0
0300	0	0	0	0	0	0
0400	0	0	0	0	0	0
0500	0	0	0	0	0	0
0600	0	0	0	0	0	0
0700	5	5	3	2	1	0
0800	13	11	9	9	6	3
0900	29	28	23	19	10	10
1000	56	41	18	32	27	31
1100	91	61	39	40	58	37
1200	196	97	126	48	110	35
1300	277	98	180	57	135	43
1400	304	108	187	70	114	58
1500	231	113	168	105	120	77
1600	239	108	134	139	154	68
1700	141	106	125	87	98	-
1800	113	79	143	50	87	-
1900	105	55	164	43	60	-
2000	104	35	125	40	42	-
2100	52	19	99	41	23	-
2200	26	11	52	28	14	-
2300	10	-	32	11	5	-

**Photosynthetically Active Radiation (PAR)**

**Totals are in  $\text{W m}^{-2}$  for each hour ending at hour indicated.**

**All times are Atlantic Daylight Time.**

1997). The results from the present study are in agreement with those of previous studies (e.g., *Wang et al.*, 2002; *Wang et al.*, 2003).

JONES SOUND  
P.A.R.

	17/8	18/8	19/8	20/8	21/8	22/8	23/8	24/8	25/8	26/8	27/8	28/8	29/8
0000	-	9	14	19	14	15	13	15	4	6	8	2	4
0100	-	2	6	8	6	6	4	5	2	2	2	0	0
0200	-	6	3	3	2	2	1	1	0	0	0	0	0
0300	-	3	2	2	1	1	0	0	0	0	0	0	0
0400	-	1	2	2	2	2	0	0	0	0	0	0	0
0500	-	3	4	2	4	3	2	2	0	0	0	0	0
0600	-	6	10	6	11	8	6	6	0	3	3	2	0
0700	-	10	21	15	25	21	16	20	2	11	10	6	3
0800	-	25	43	29	51	55	29	49	6	27	22	20	12
0900	-	44	83	62	79	86	55	86	13	39	35	59	26
1000	0	94	104	137	93	126	89	77	22	58	51	78	52
1100	69	131	104	163	138	166	89	49	55	112	90	72	55
1200	83	121	96	201	200	180	178	41	61	178	156	85	85
1300	89	141	116	241	182	224	164	59	69	210	129	115	104
1400	55	187	236	170	258	249	210	78	68	180	225	115	89
1500	73	168	209	228	250	204	120	72	75	130	239	83	87
1600	81	162	279	244	223	206	144	59	113	174	205	127	118
1700	83	112	232	245	217	234	120	81	120	219	142	152	151
1800	72	111	186	222	164	153	93	99	101	190	139	183	190
1900	53	69	100	192	186	119	53	83	68	160	165	140	138
2000	53	61	93	129	140	119	51	46	51	69	79	89	64
2100	52	55	75	89	111	72	44	31	56	83	34	62	41
2200	27	33	64	65	66	41	32	16	57	32	14	19	19
2300	17	20	50	25	33	26	30	9	17	21	6	11	8

JONES SOUND  
P.A.R.

	30/8	31/8	1/9	2/9	3/9	4/9
0000	2	2	3	3	0	0
0100	0	0	0	0	0	0
0200	0	0	0	0	0	0
0300	0	0	0	0	0	0
0400	0	0	0	0	0	0
0500	0	0	0	0	0	0
0600	0	0	0	0	0	0
0700	4	4	3	2	1	0
0800	11	10	8	8	6	3
0900	23	23	20	15	9	8
1000	41	34	16	25	23	24
1100	68	50	33	32	47	30
1200	133	78	98	44	84	29
1300	153	78	131	47	98	37
1400	213	87	146	57	89	49
1500	173	91	134	84	95	63
1600	194	87	106	108	122	56
1700	106	85	99	69	80	-
1800	86	67	111	41	70	-
1900	81	63	131	35	50	-
2000	79	44	91	32	36	-
2100	41	28	64	32	18	-
2200	21	17	32	19	11	-
2300	8	9	16	7	4	-

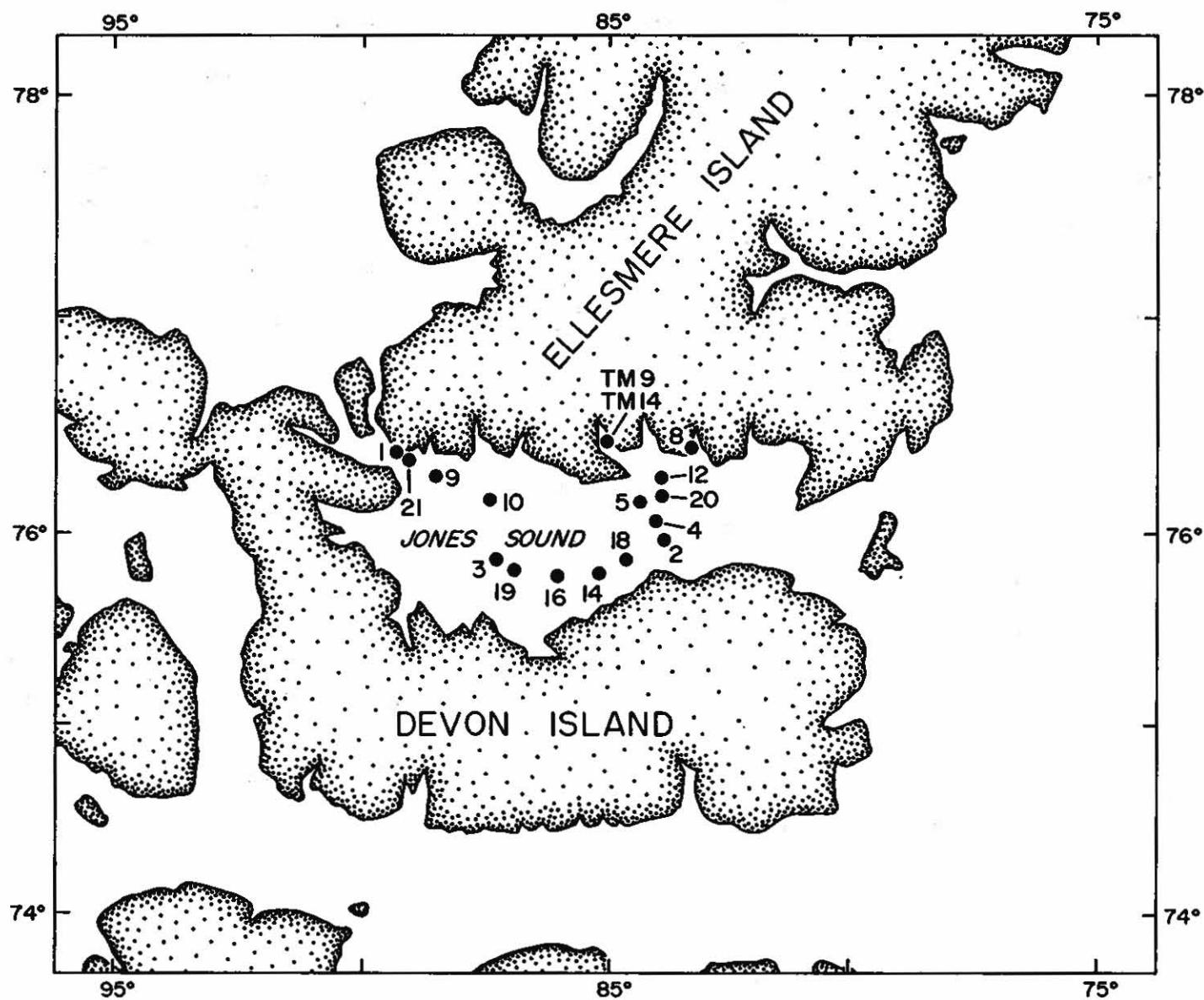


Fig. 1 Location of sampling stations in Jones Sound occupied between August 18 and September 3, 1984.

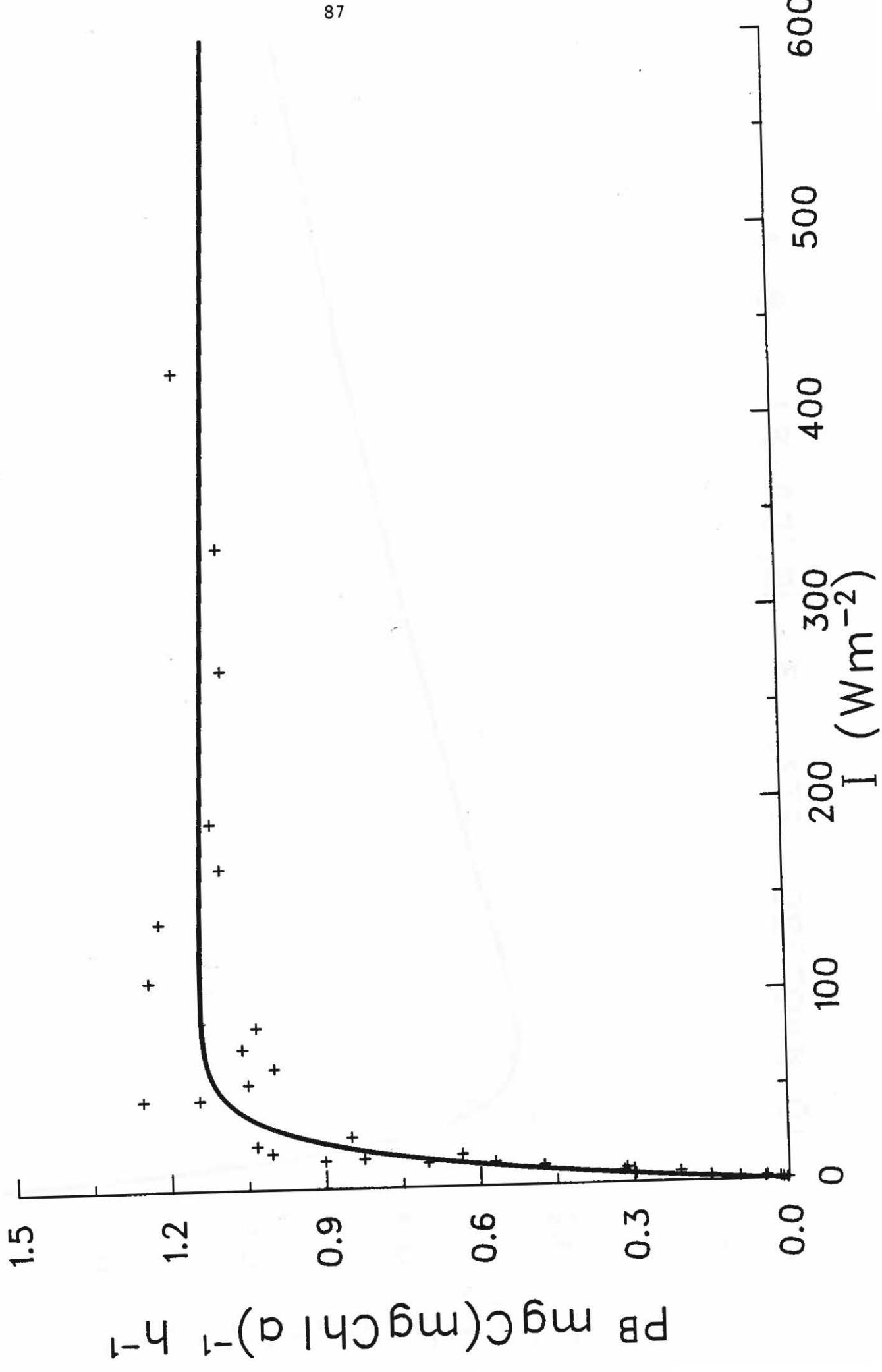


**Solid Line Fit to Carbon PI Data**



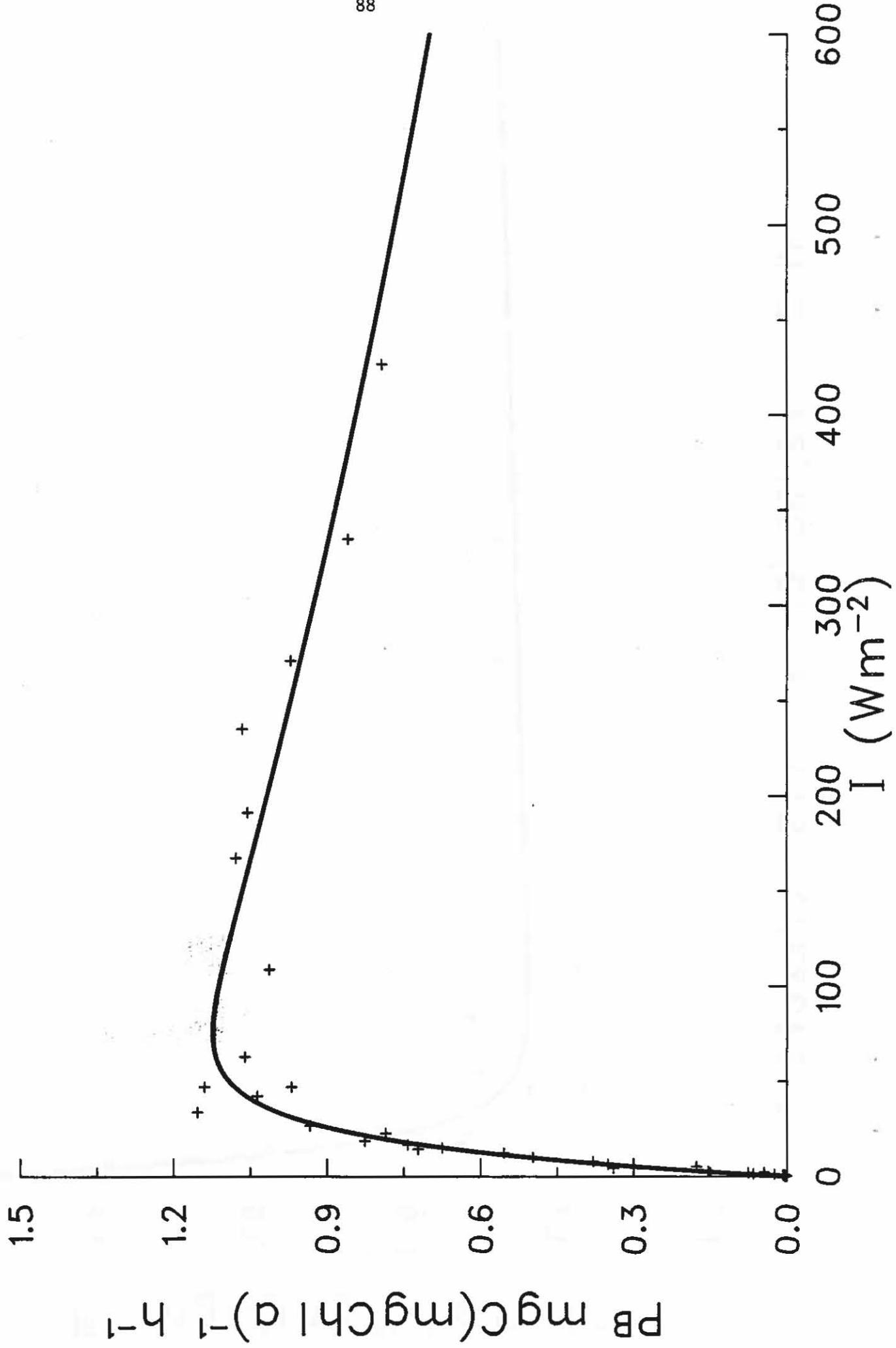
ID 8407779 STA. 3 19/08/84 2 M.

87

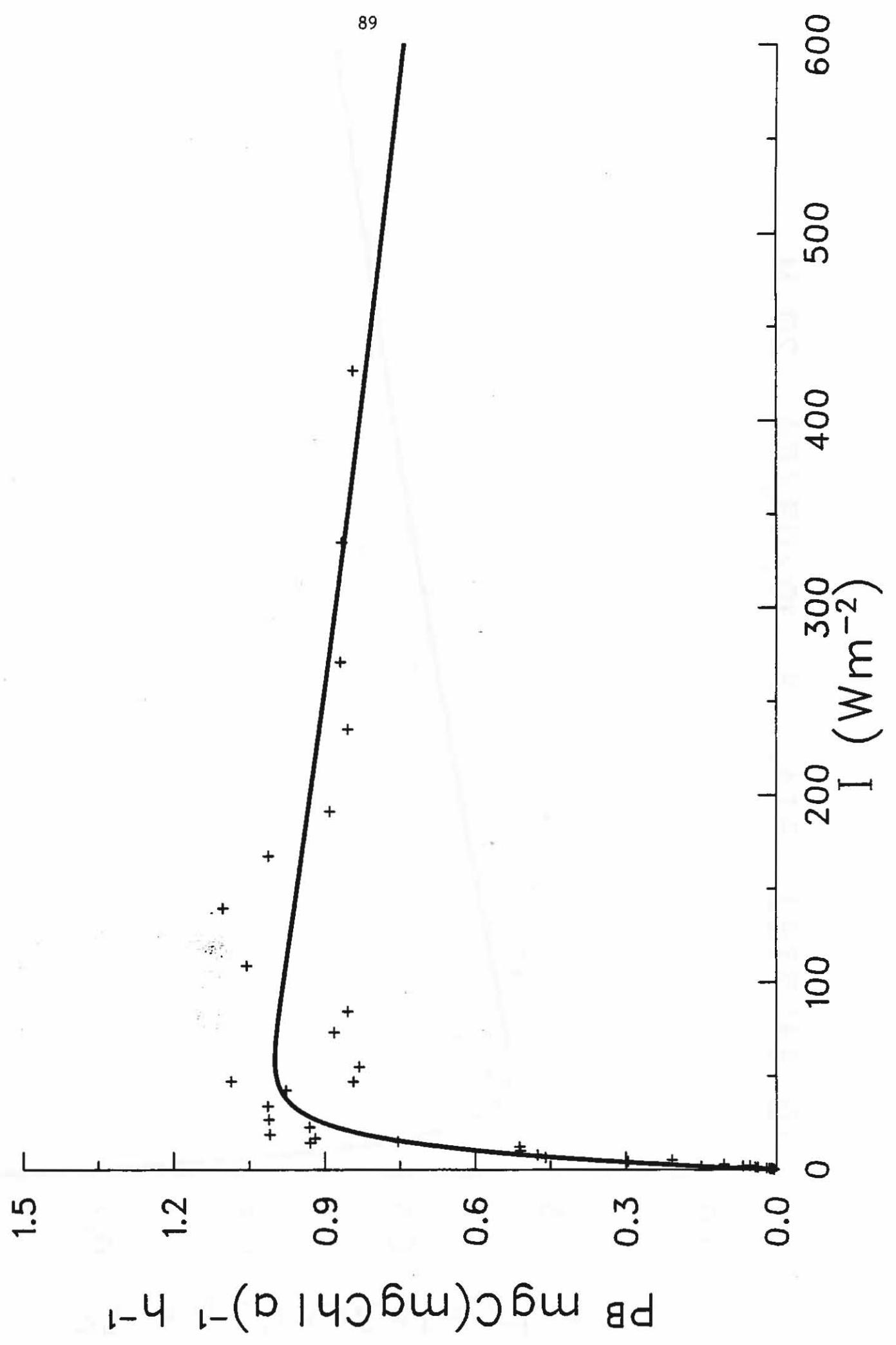


ID 8407780 STA. 3 19/08/84 8 M.

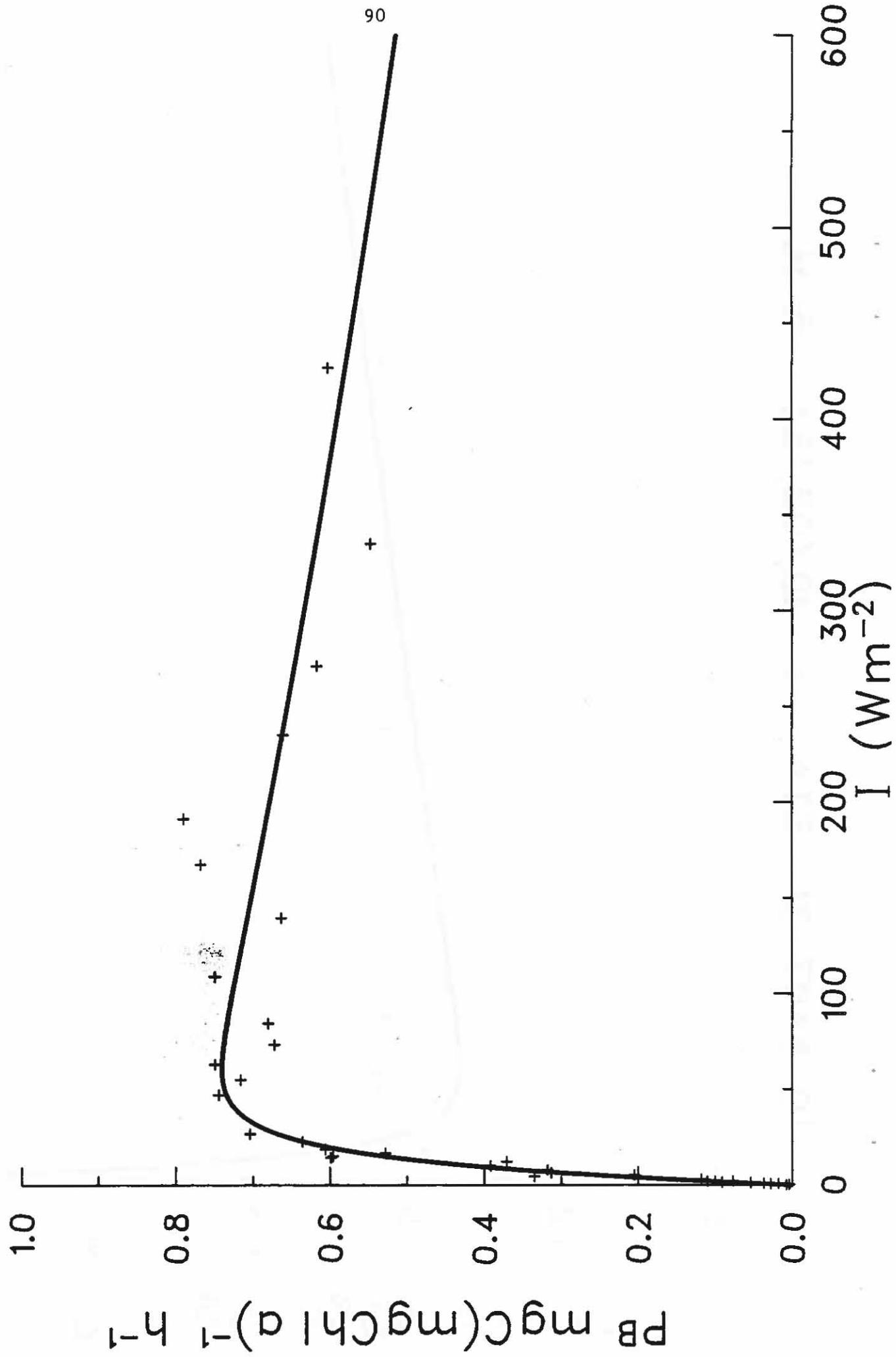
88



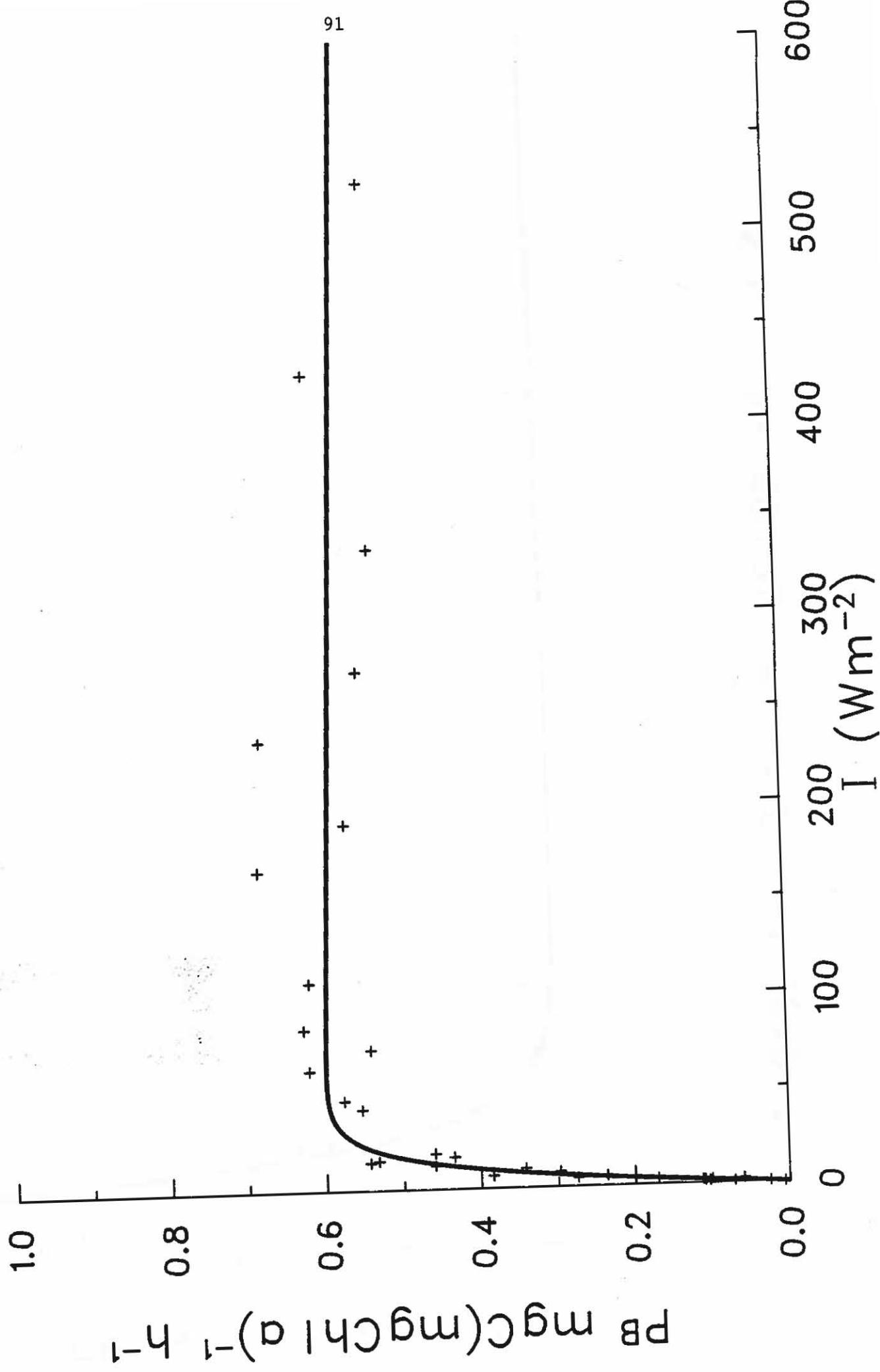
ID 8407781 STA. 3 19/08/84 15 M.



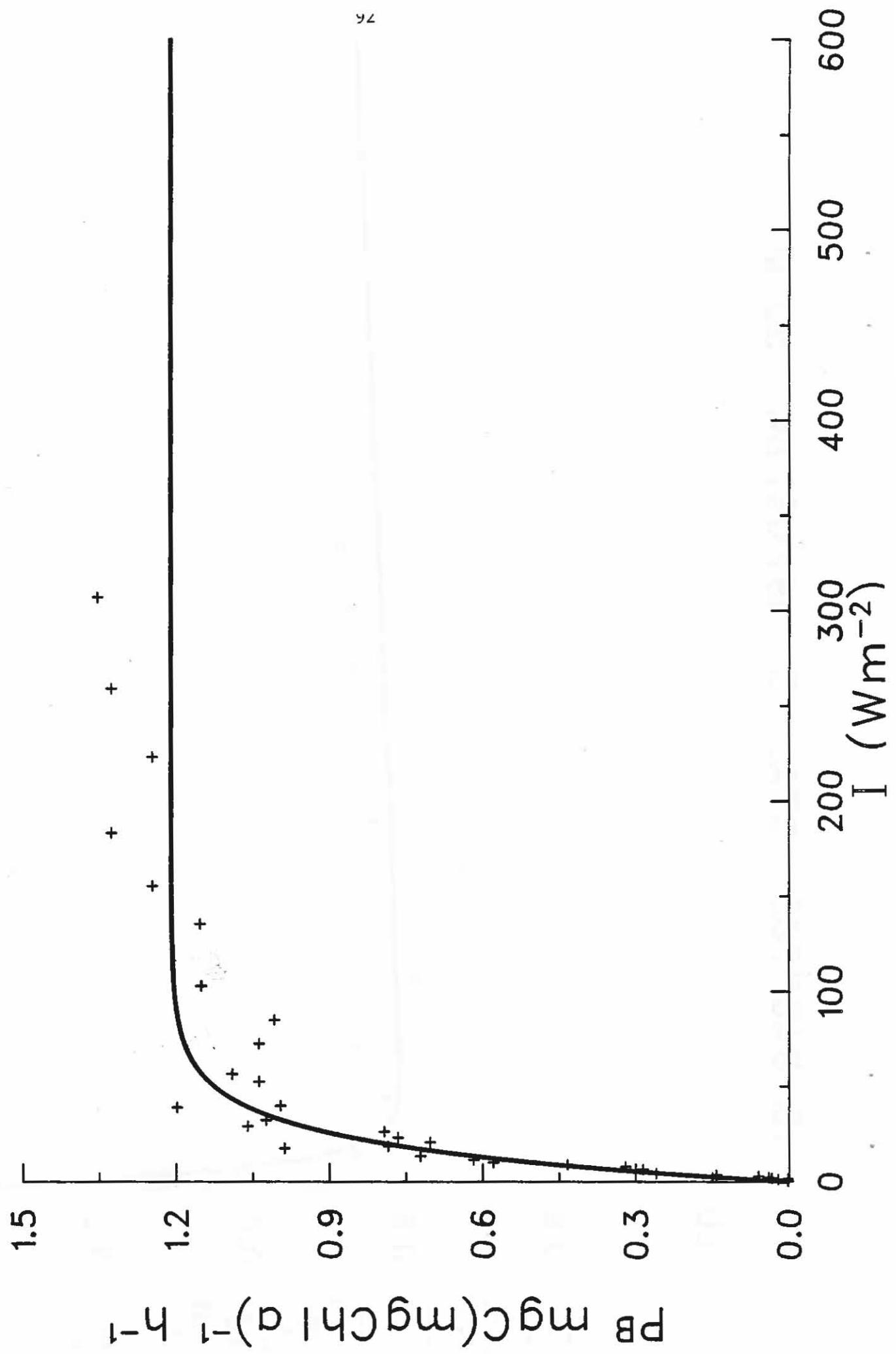
ID 8407782 STA. 3 19/08/84 20 M.



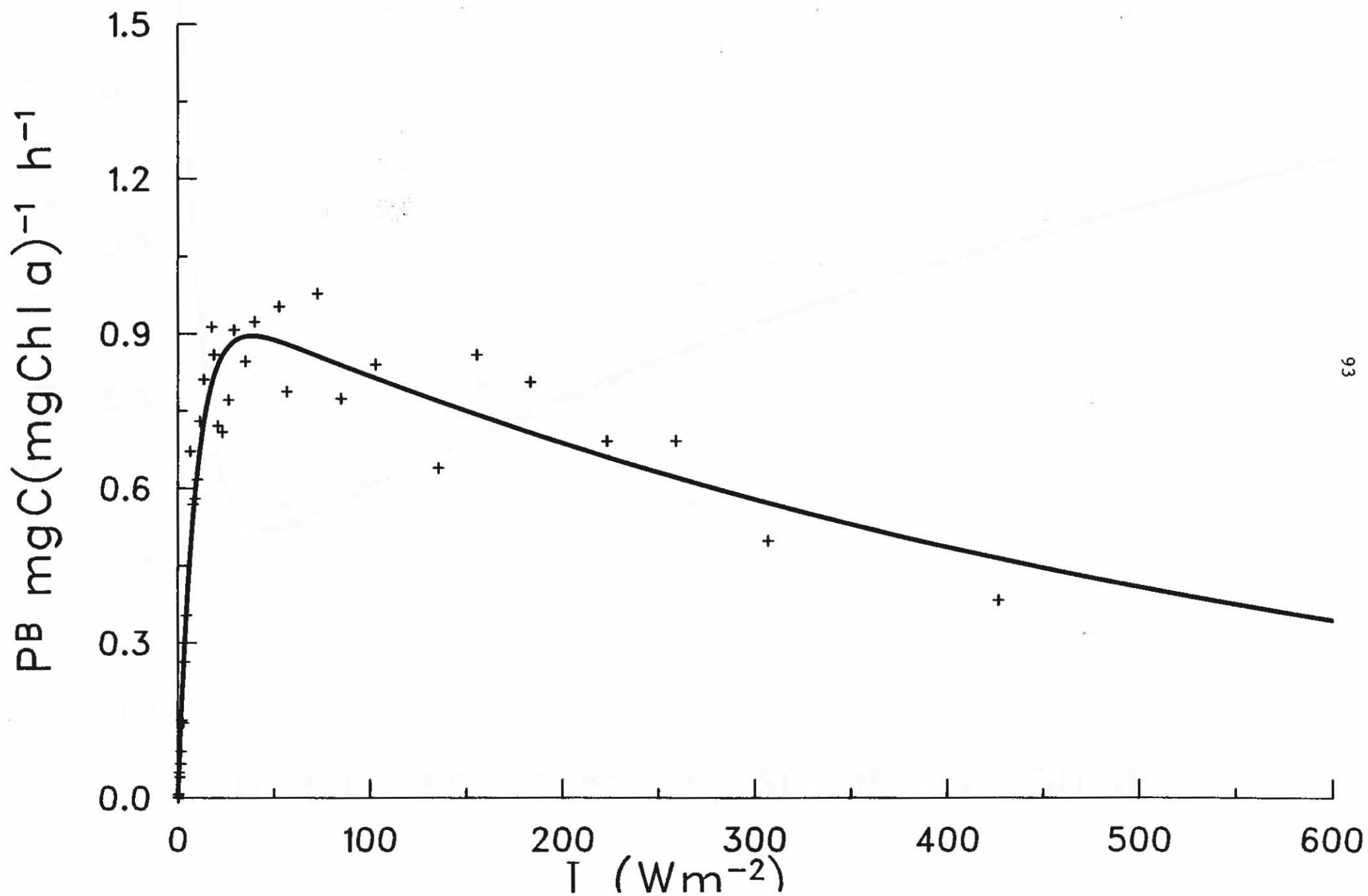
ID 8407783 STA. 3 19/08/84 50 M.



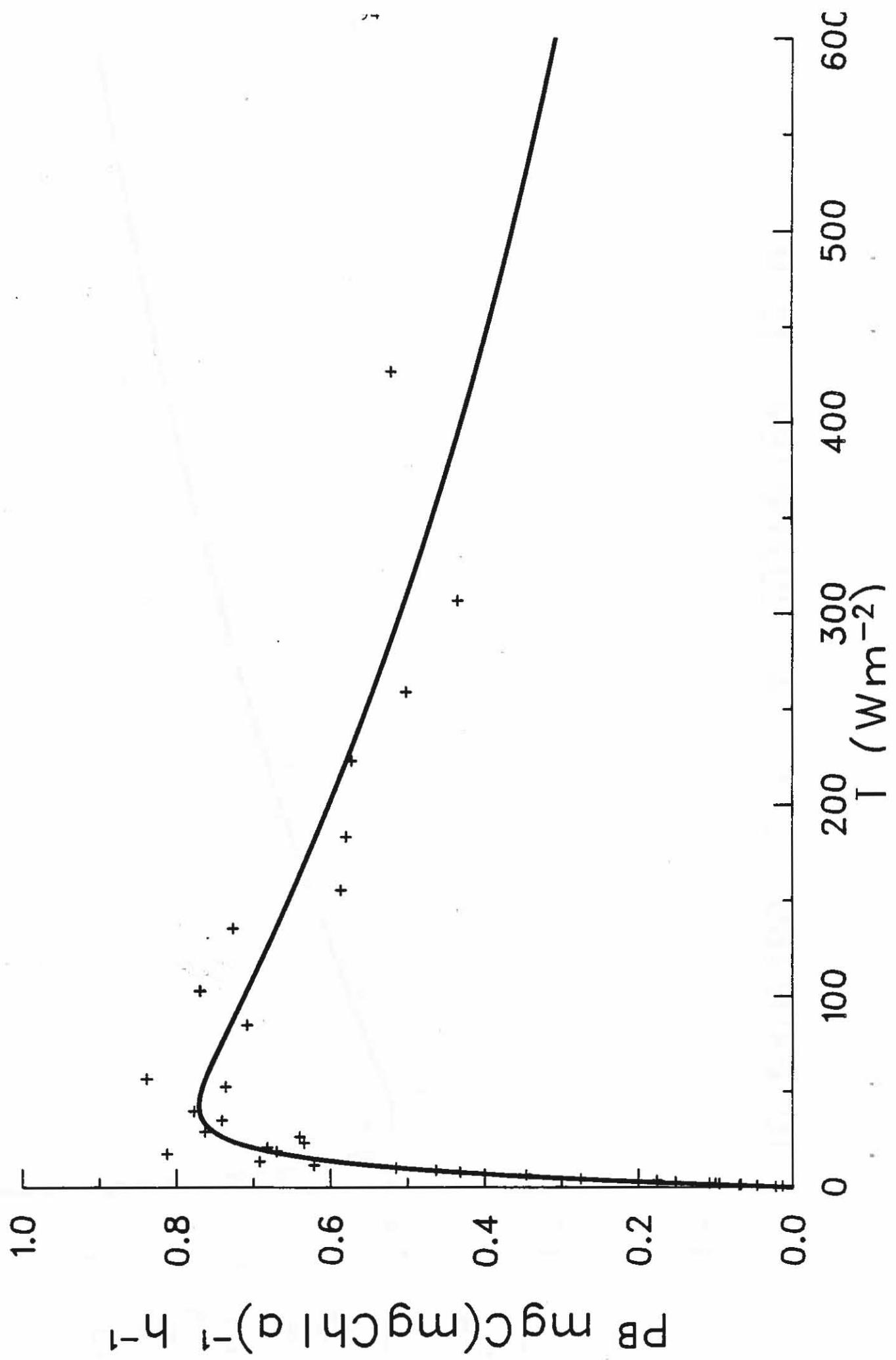
ID 8407784 STA. 4 20/08/84 5 M.



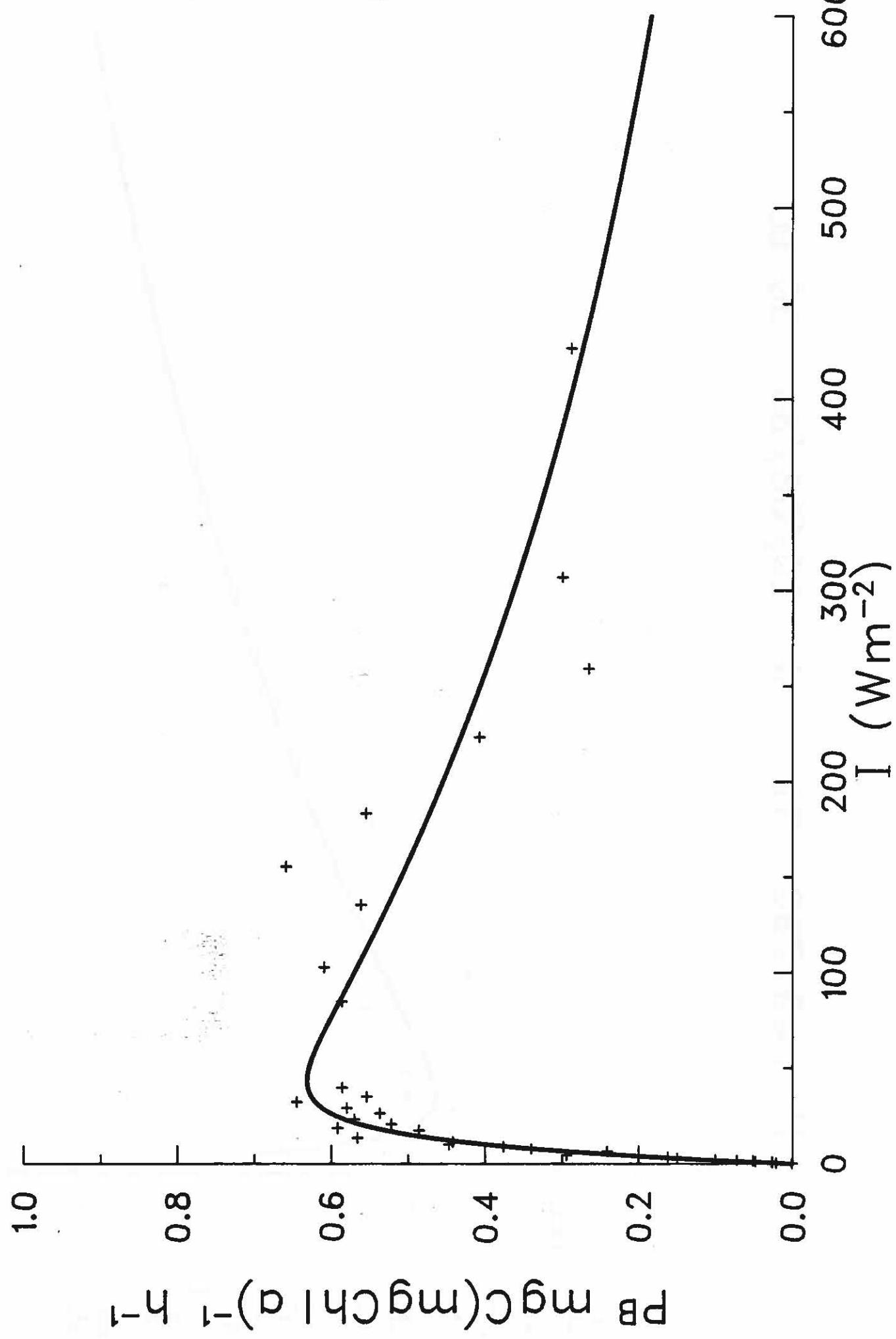
ID 8407785 STA. 4 20/08/84 12 M.



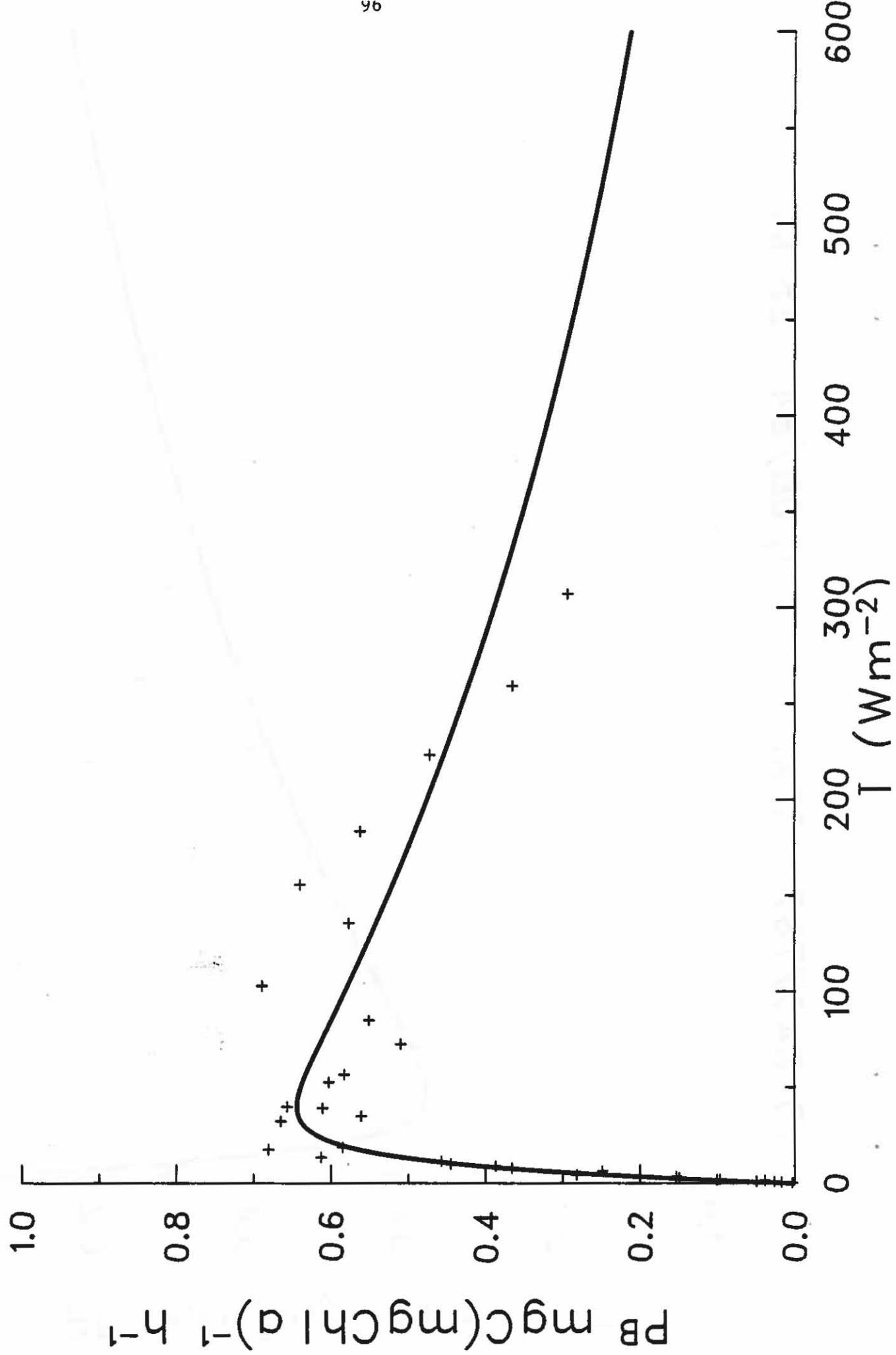
ID 8407786 STA. 4 20/08/84 20 M.



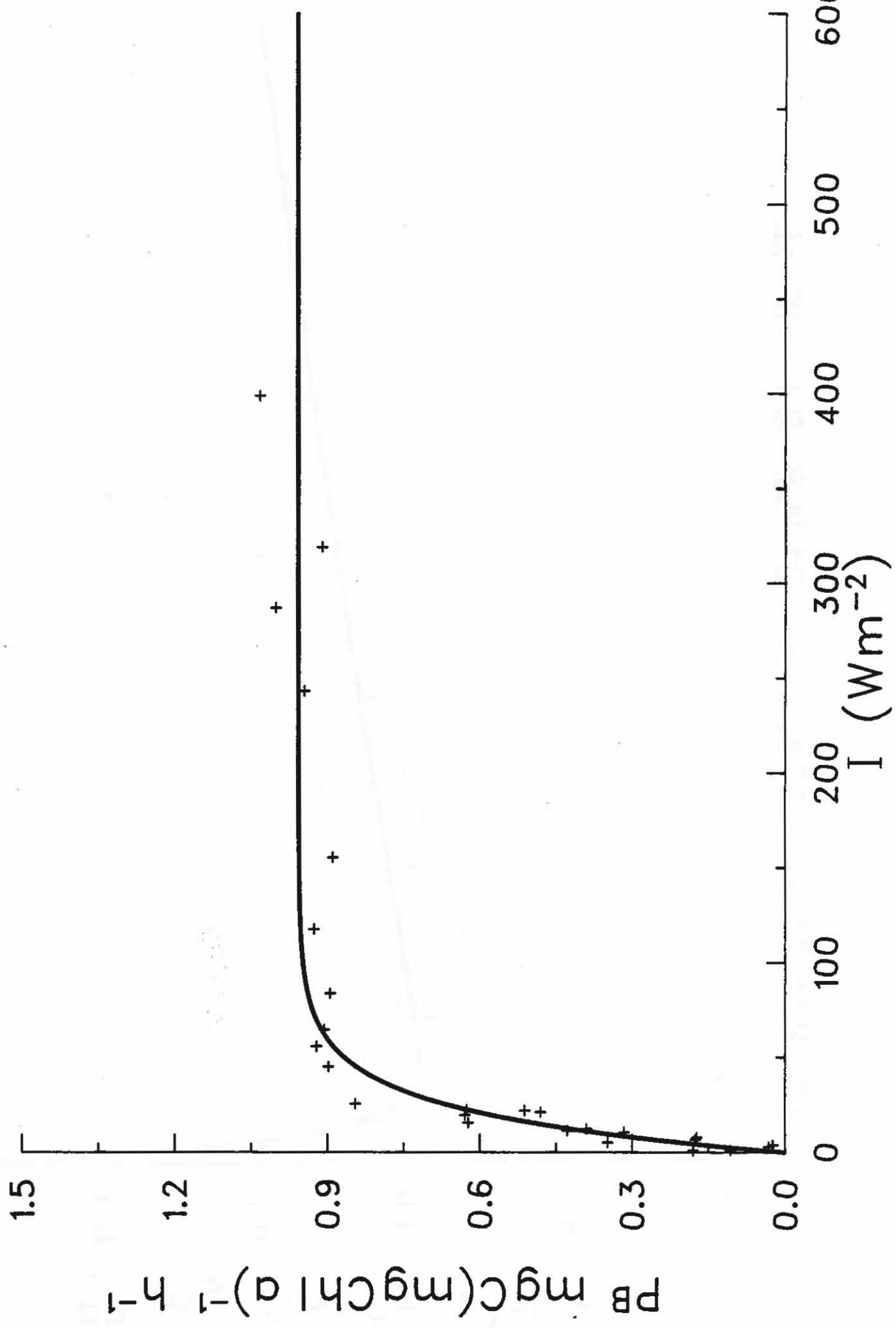
ID 8407787 STA. 4 20/08/84 25 M.



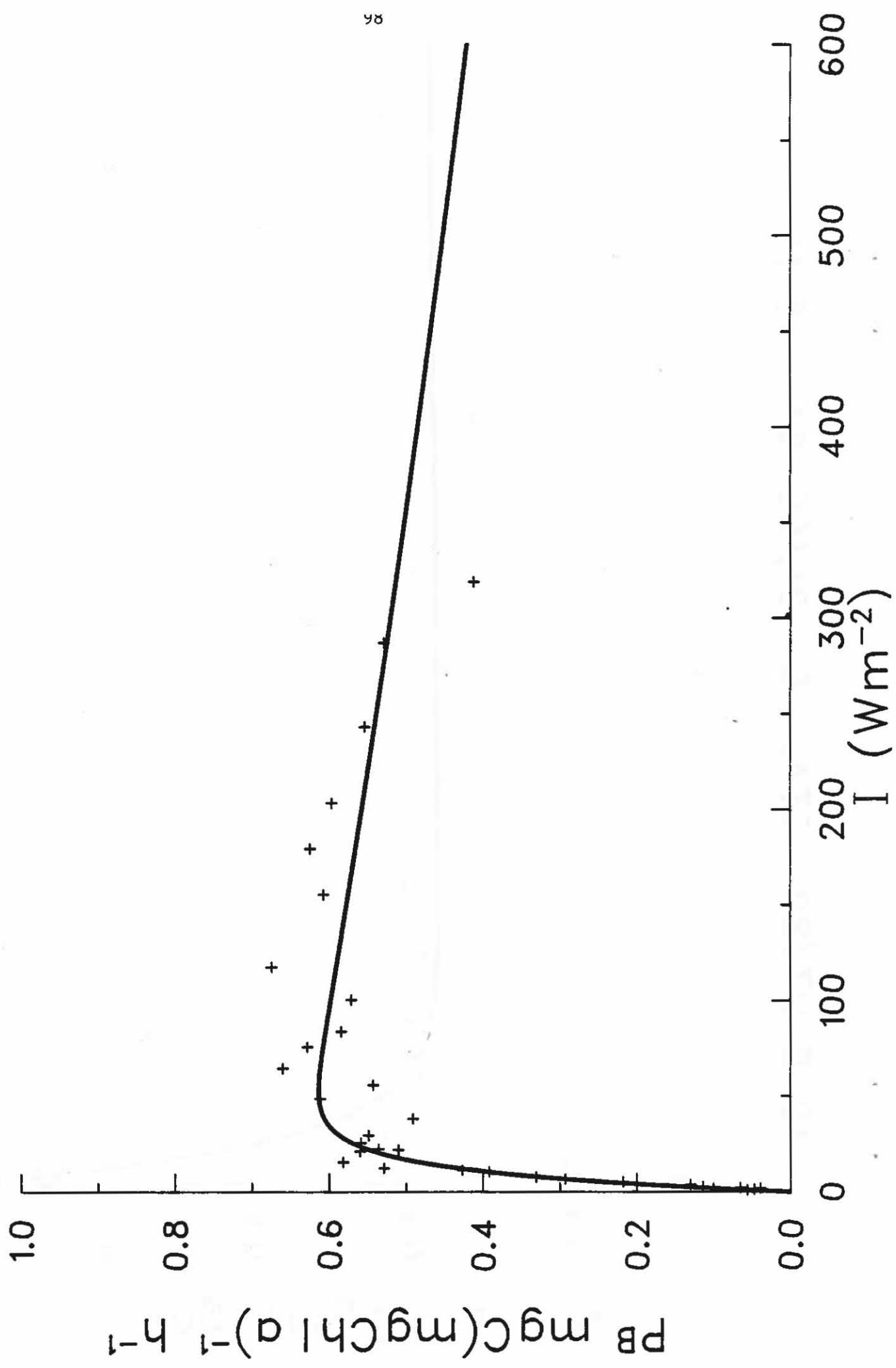
ID 8407788 STA. 4 20/08/84 50 M.



ID 8407789 STA. 5 21/08/84 5 M.

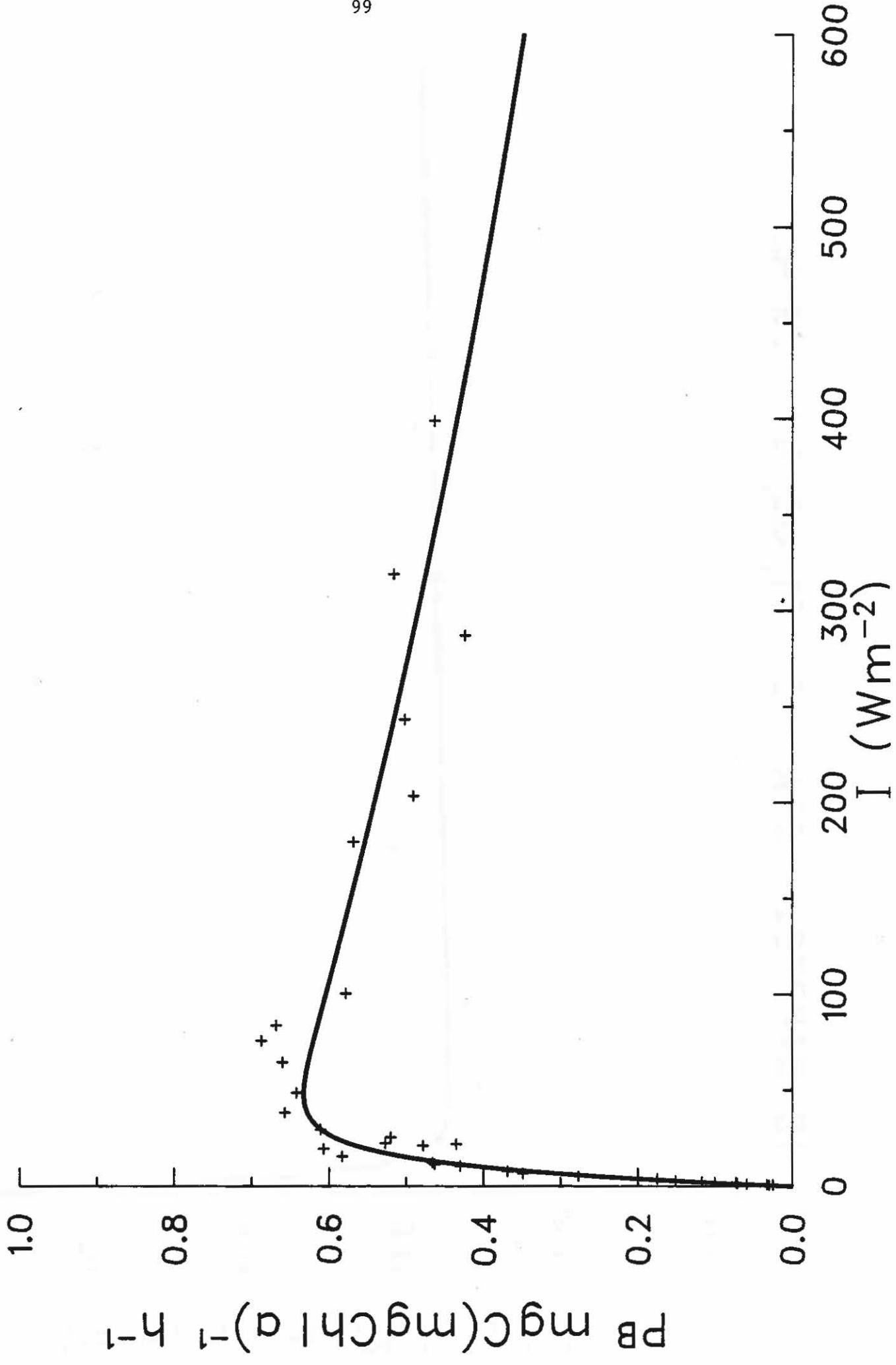


ID 8407790 STA. 5 21/08/84 16 M.

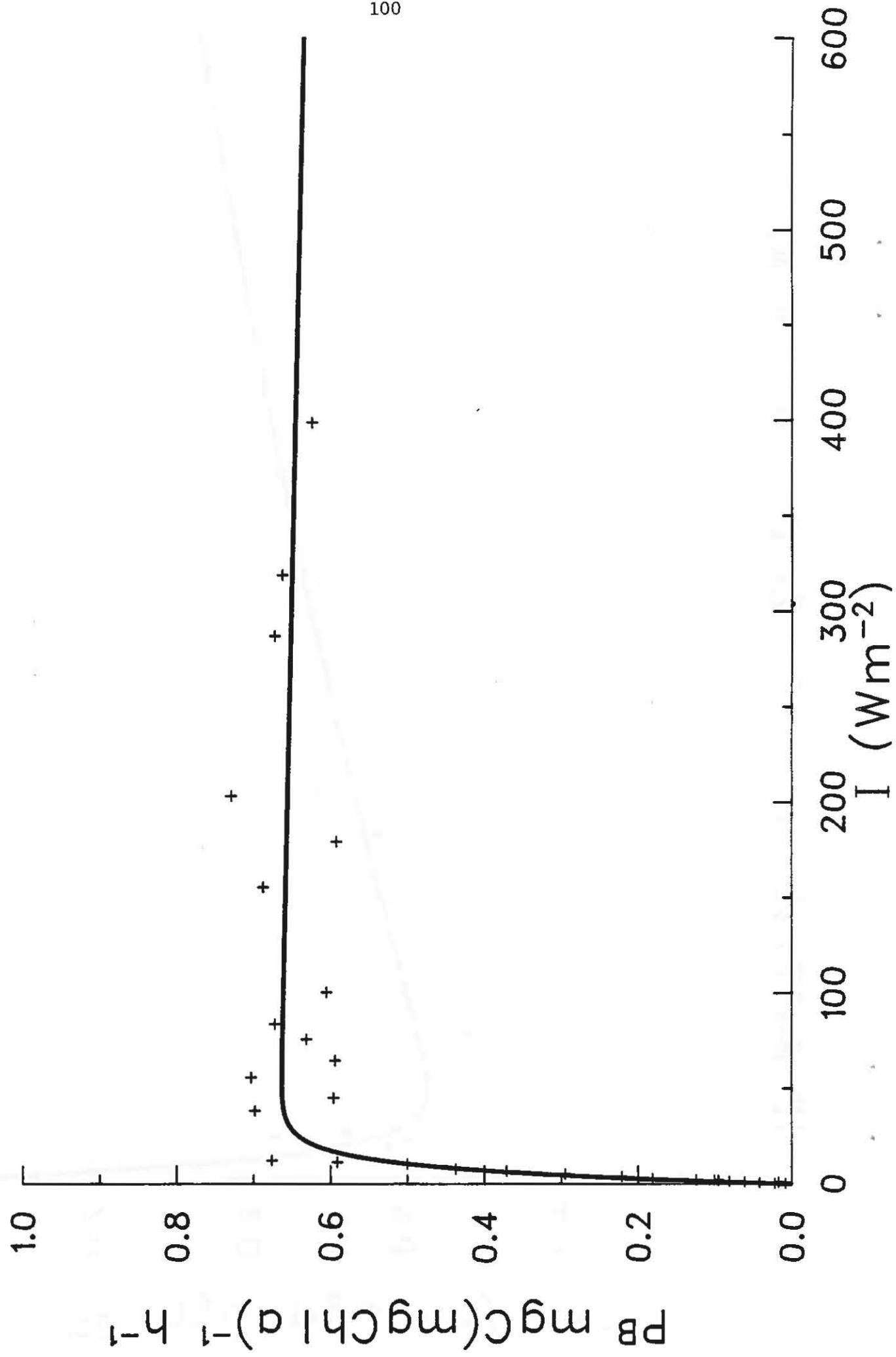


ID 8407791 STA. 5 21/08/84 24 M.

99

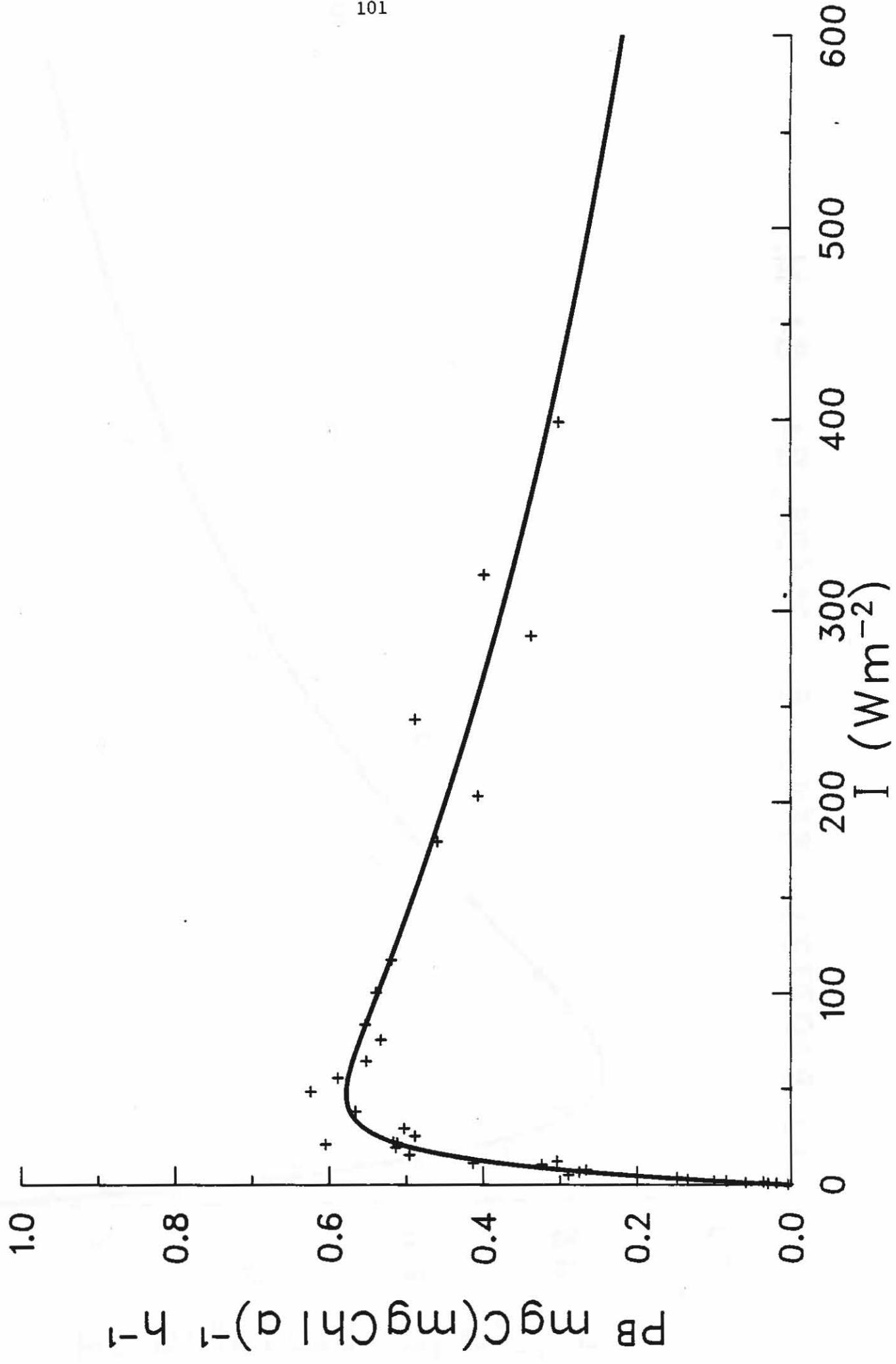


ID 8407792 STA. 5 21/08/84 39 M.



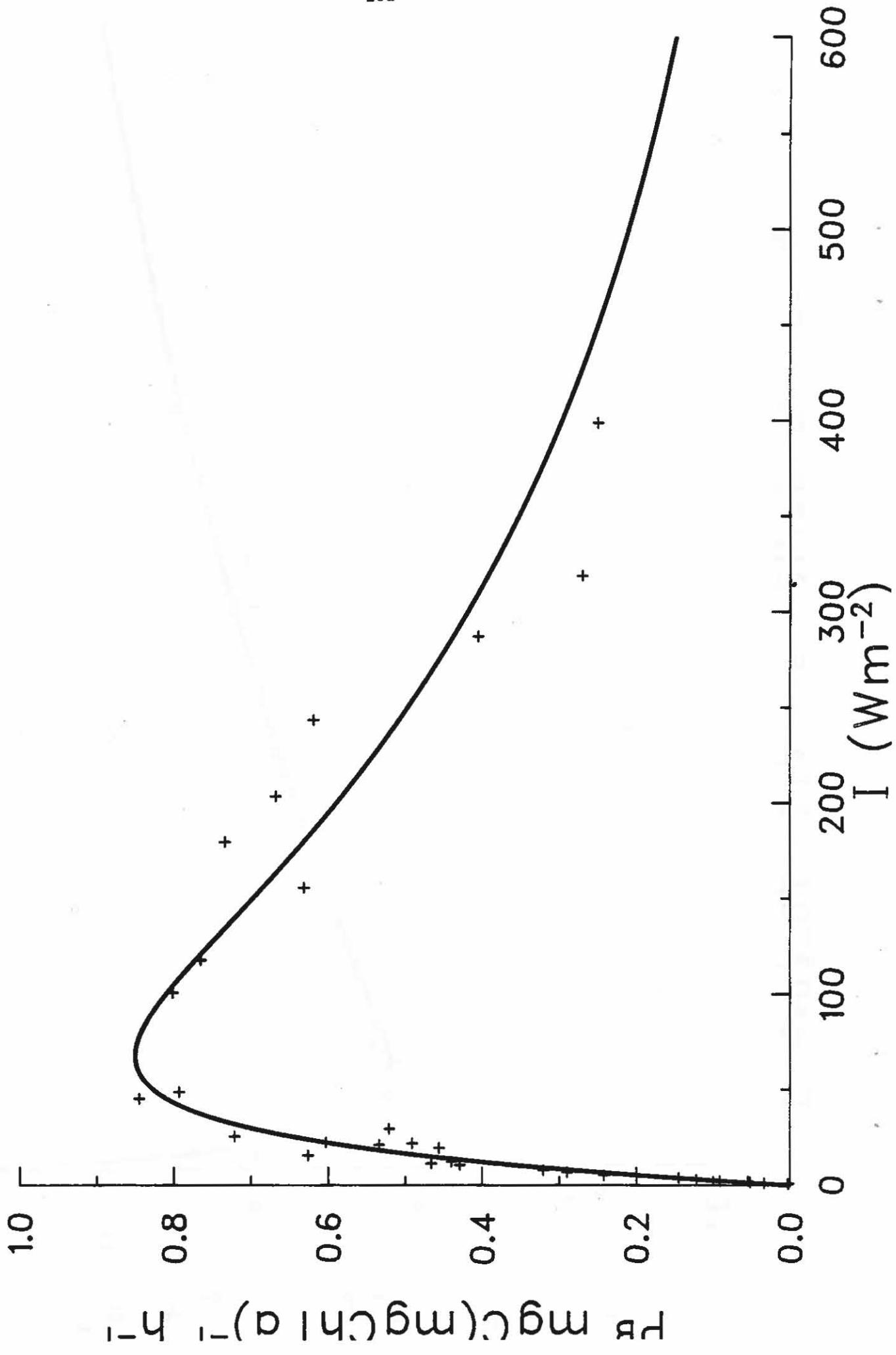
ID 8407793 STA. 5 21/08/84 59 M.

101

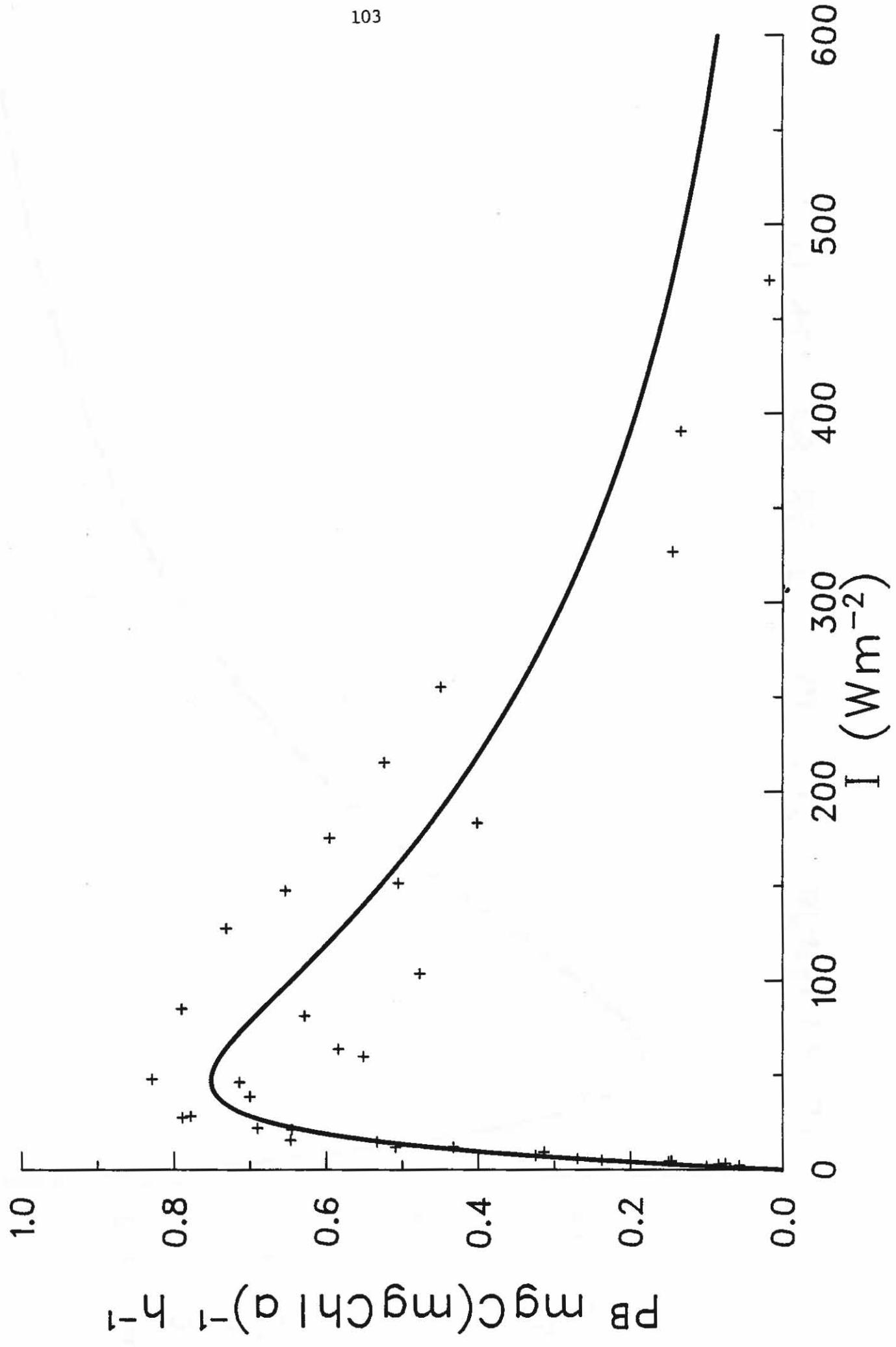


ID 8407794 STA. 5 21/08/84 84 M.

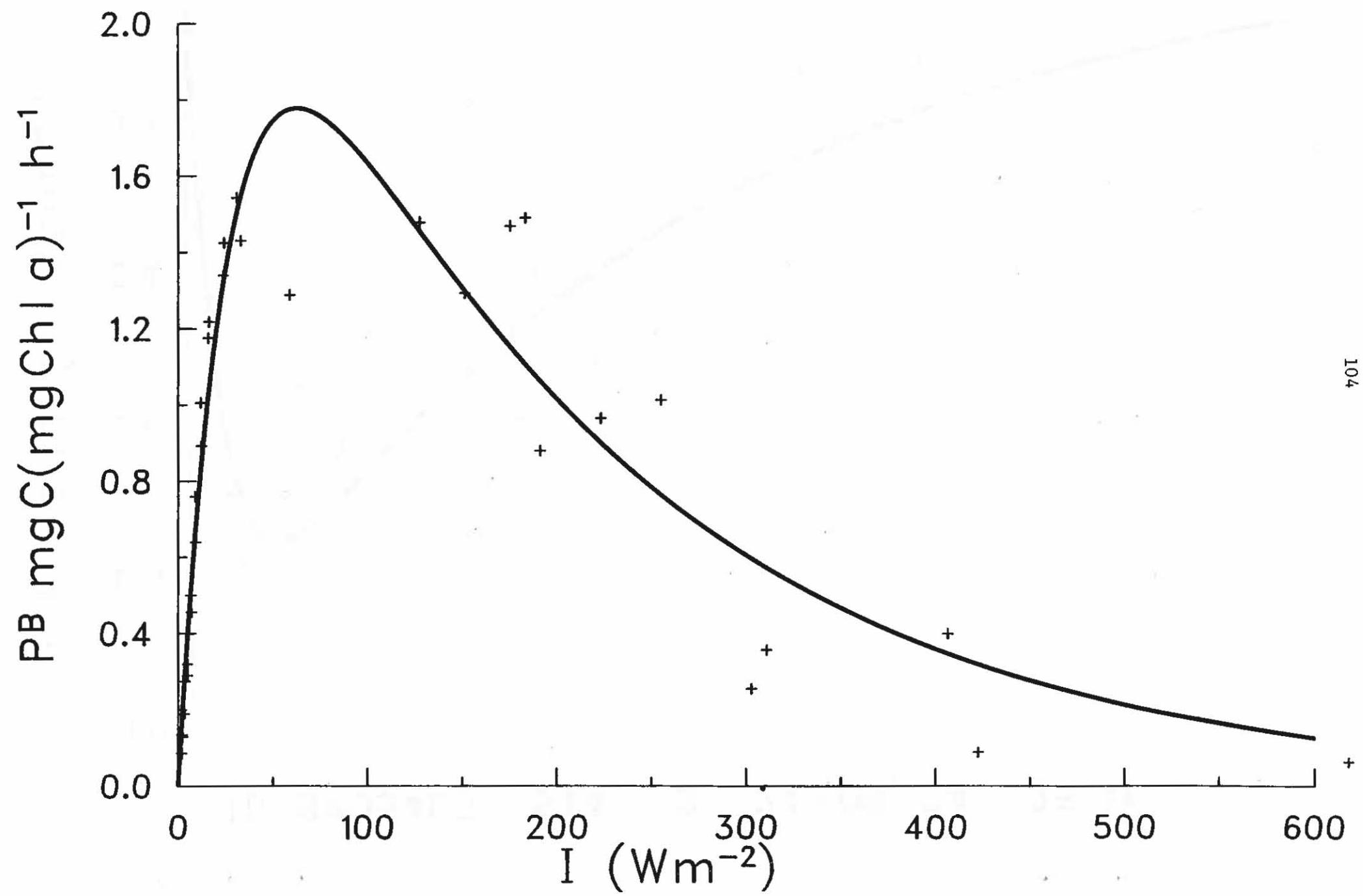
102



ID 8403403 STA. 9 24/08/84 25 M.

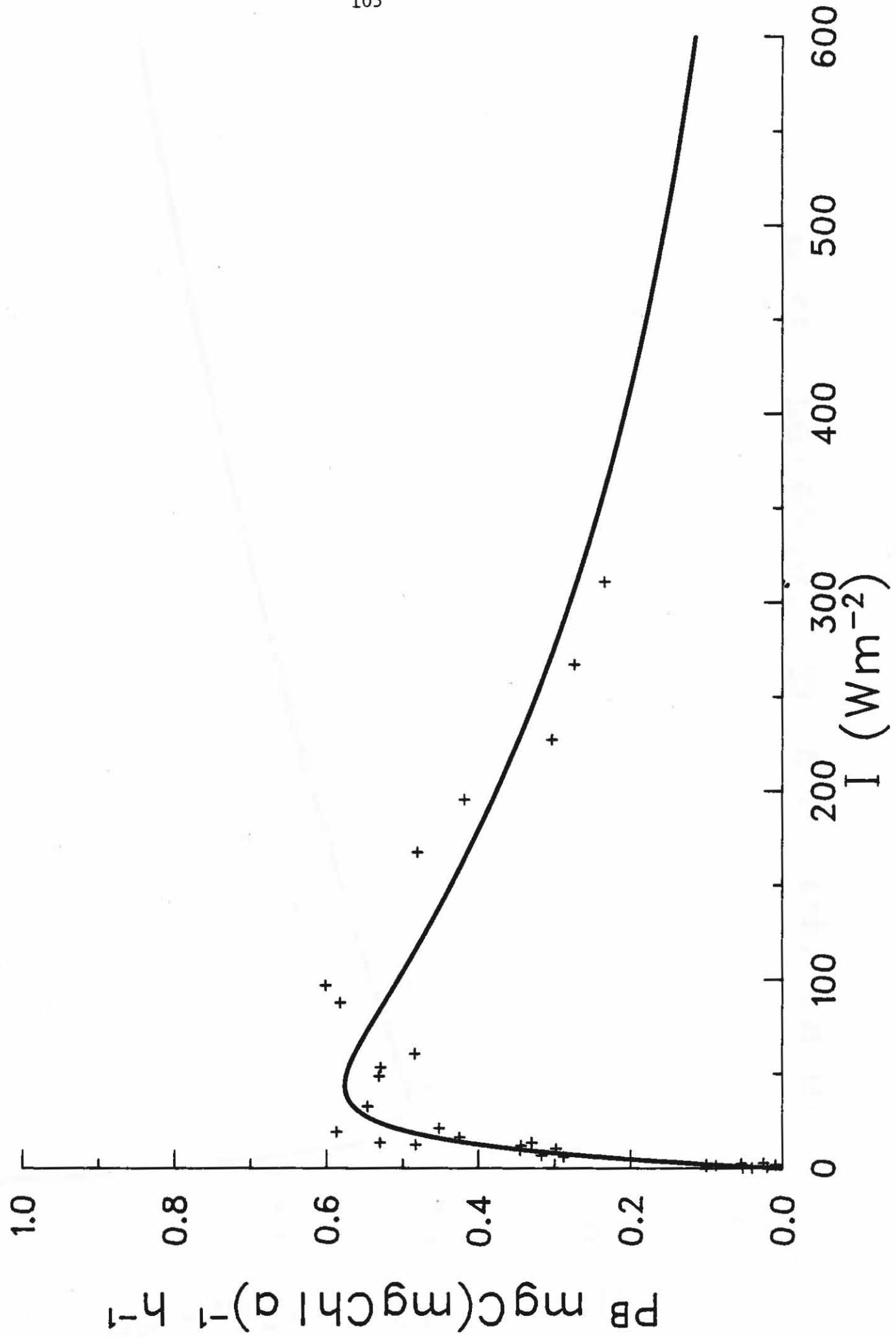


ID 8403409 STA. 10 25/08/84 25 M.



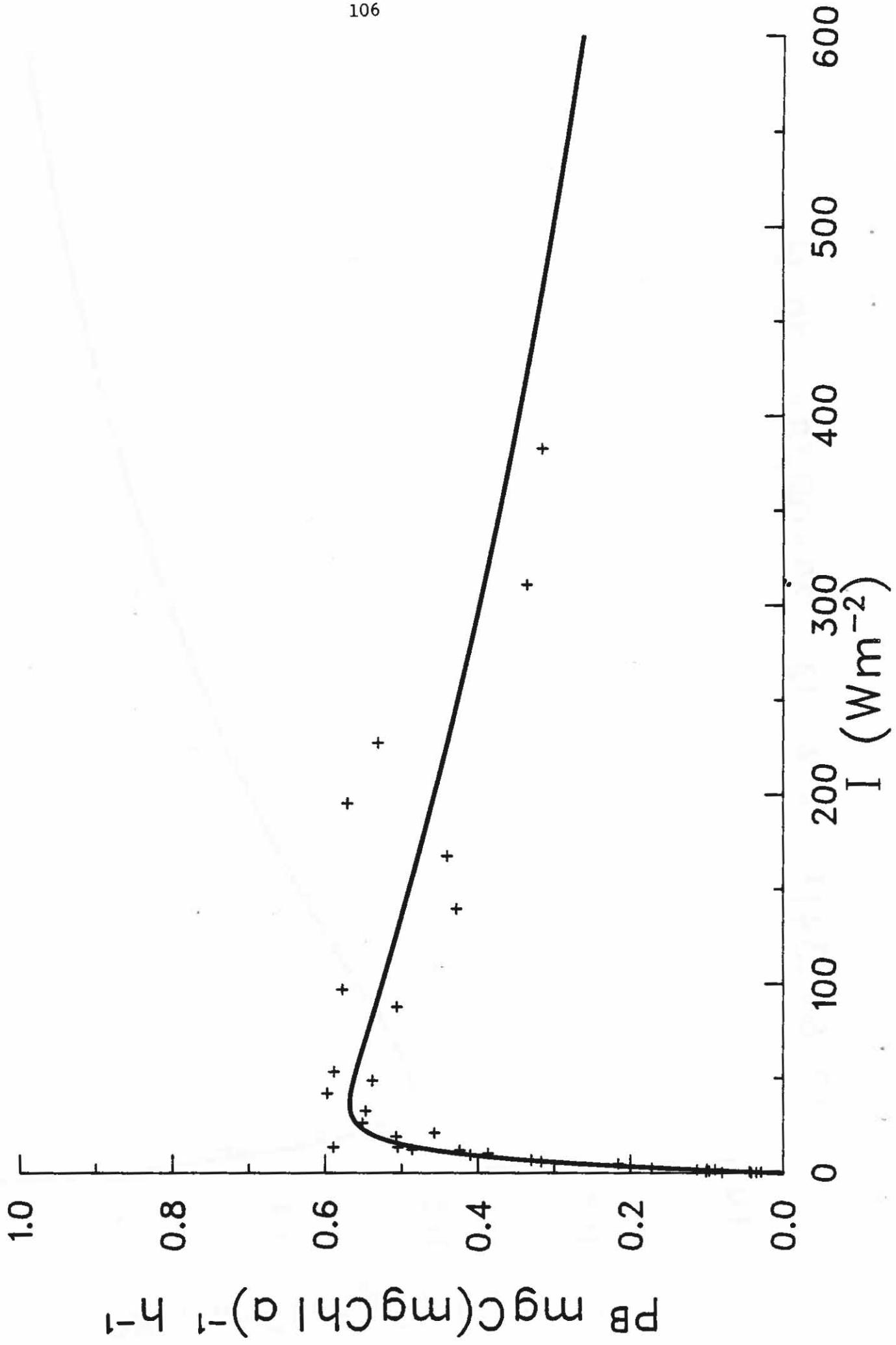
ID 8403413 STA. 12 26/08/84 10 M.

CUT

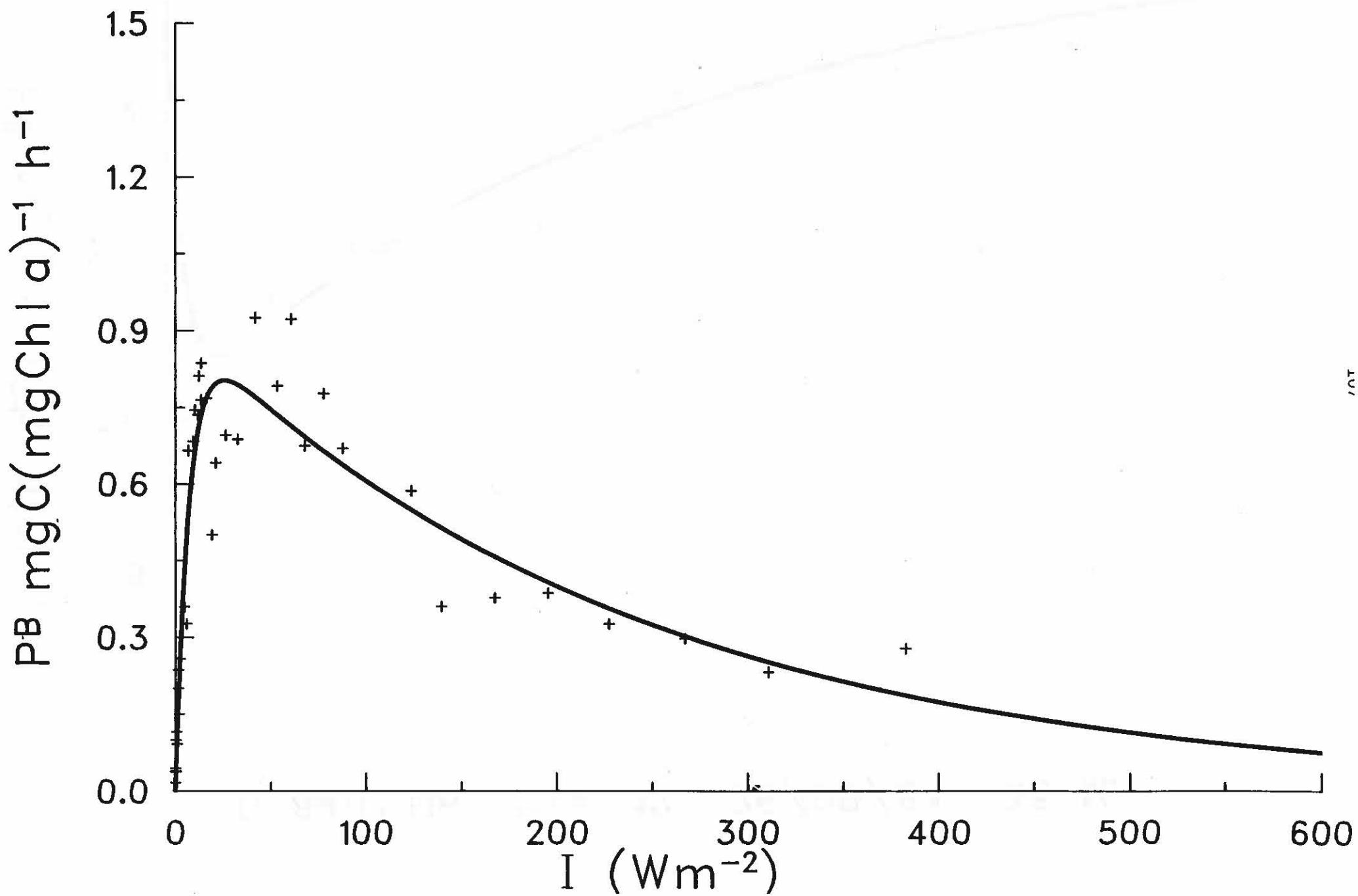


ID 8403414 STA. 12 26/08/84 23 M.

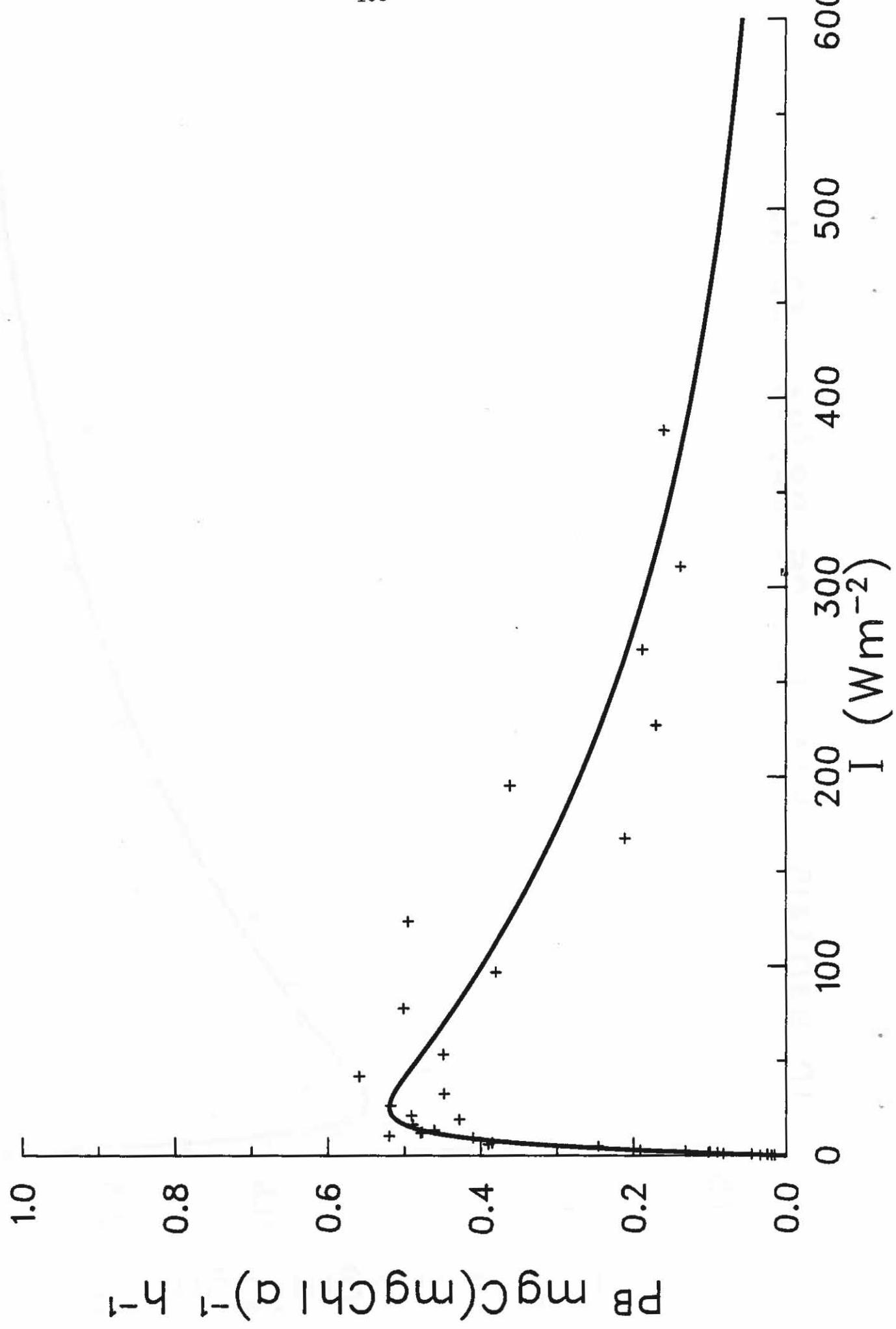
106



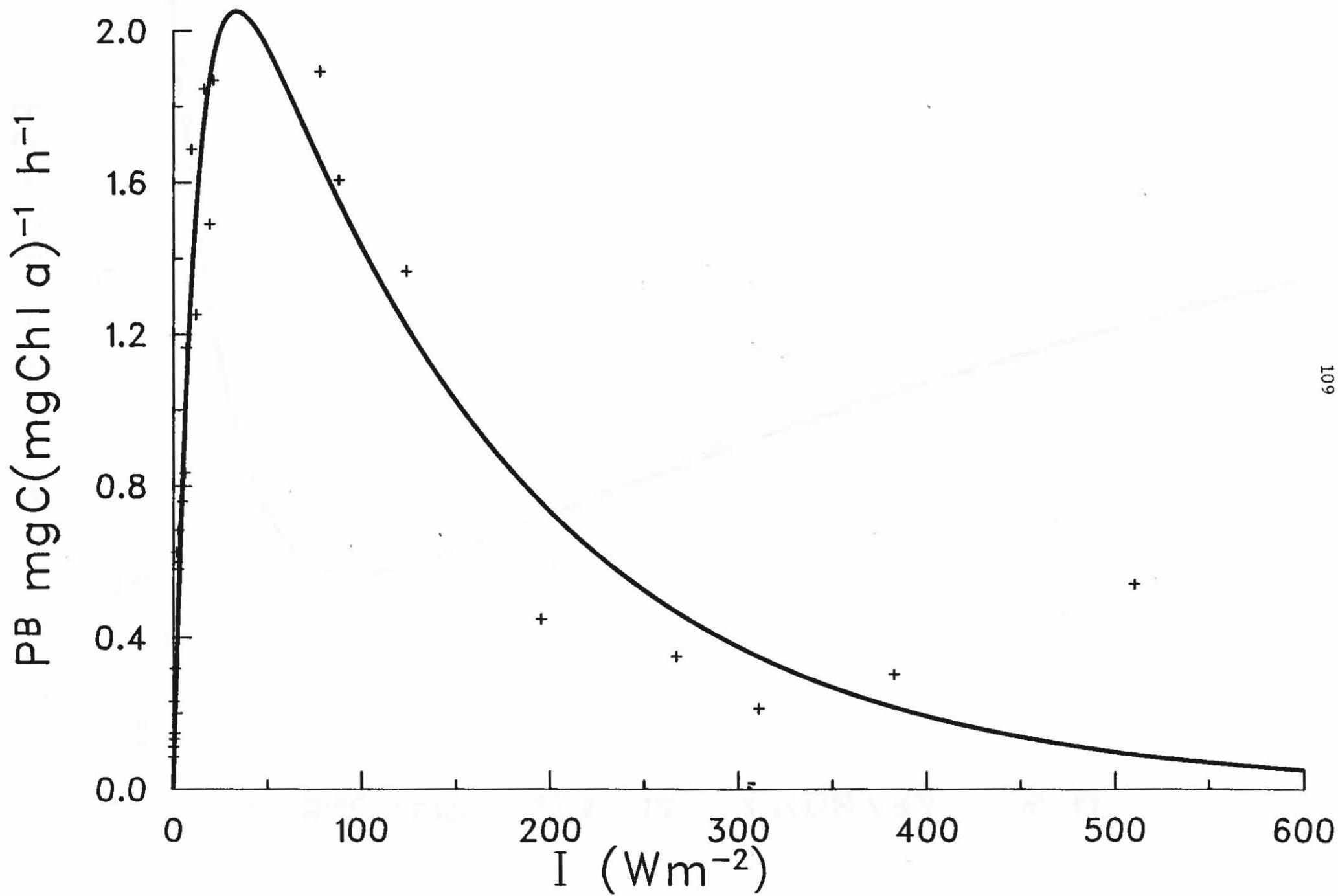
ID 8403415 STA. 12 26/08/84 - 30 M.



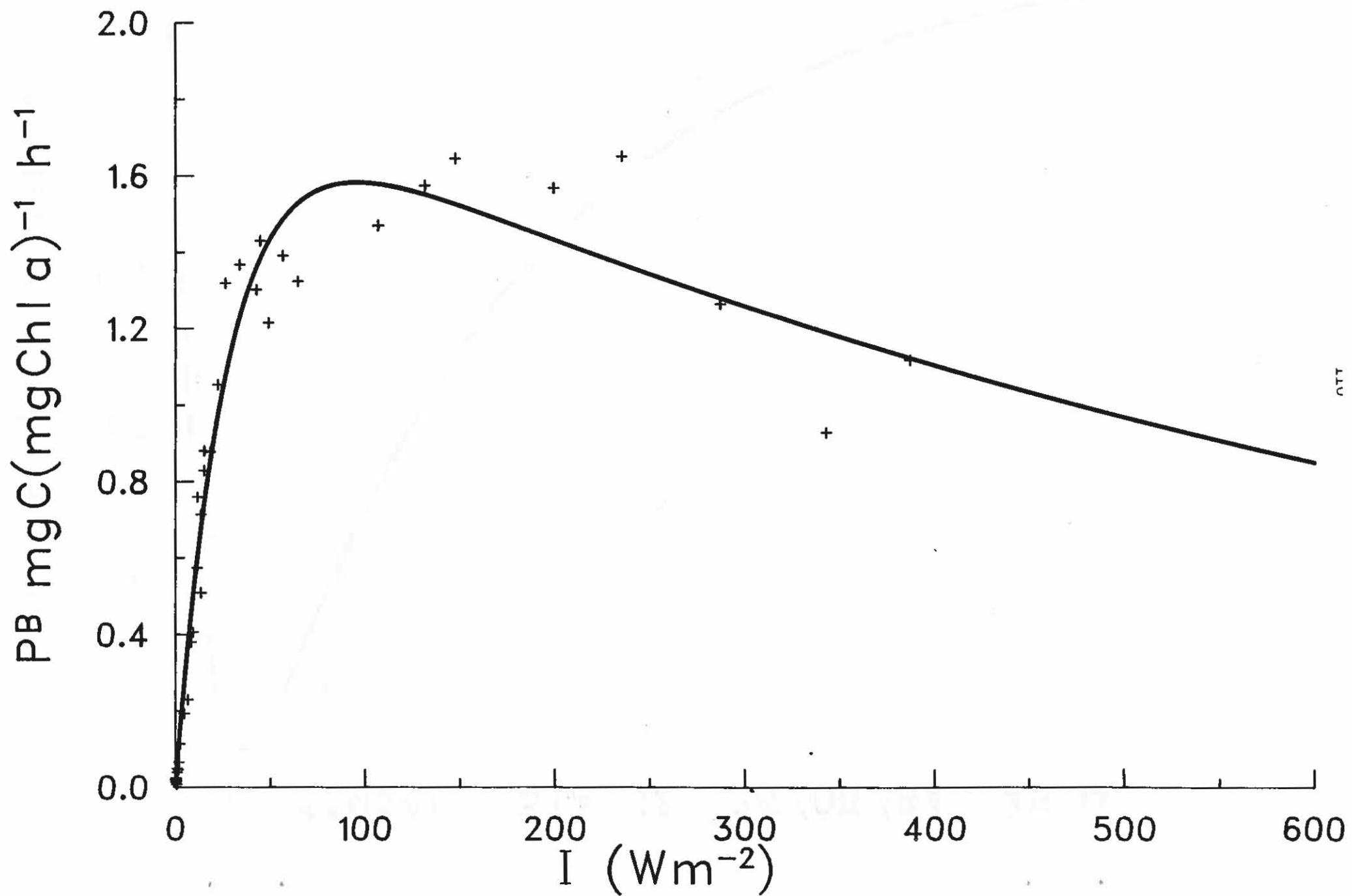
ID 8403416 STA. 12 26/08/84 35 M.



ID 8403417 STA. 12 26/08/84 45 M.



ID 8403418 STA. 14 27/08/84 5 M.

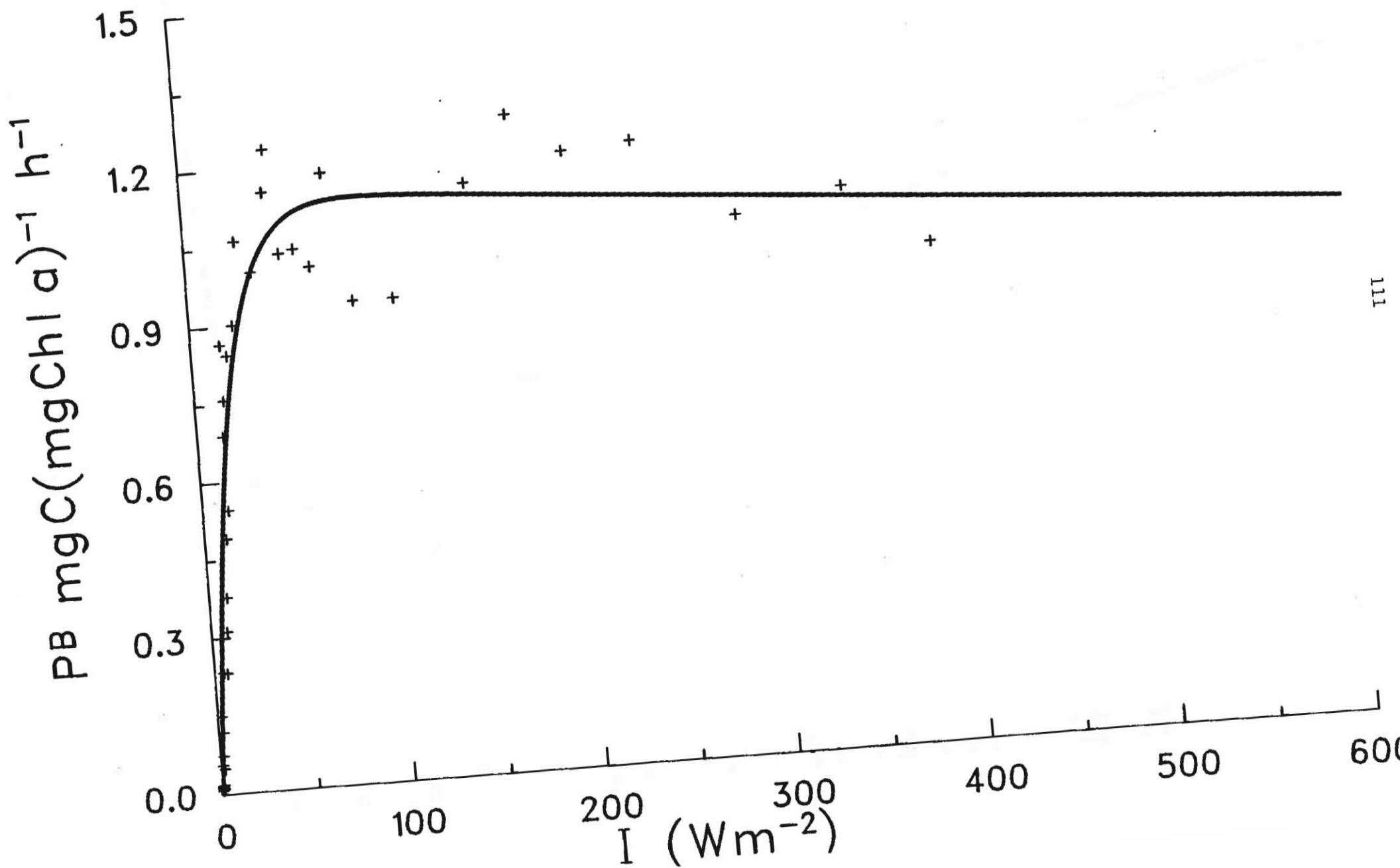


ID 8403419

STA. 14

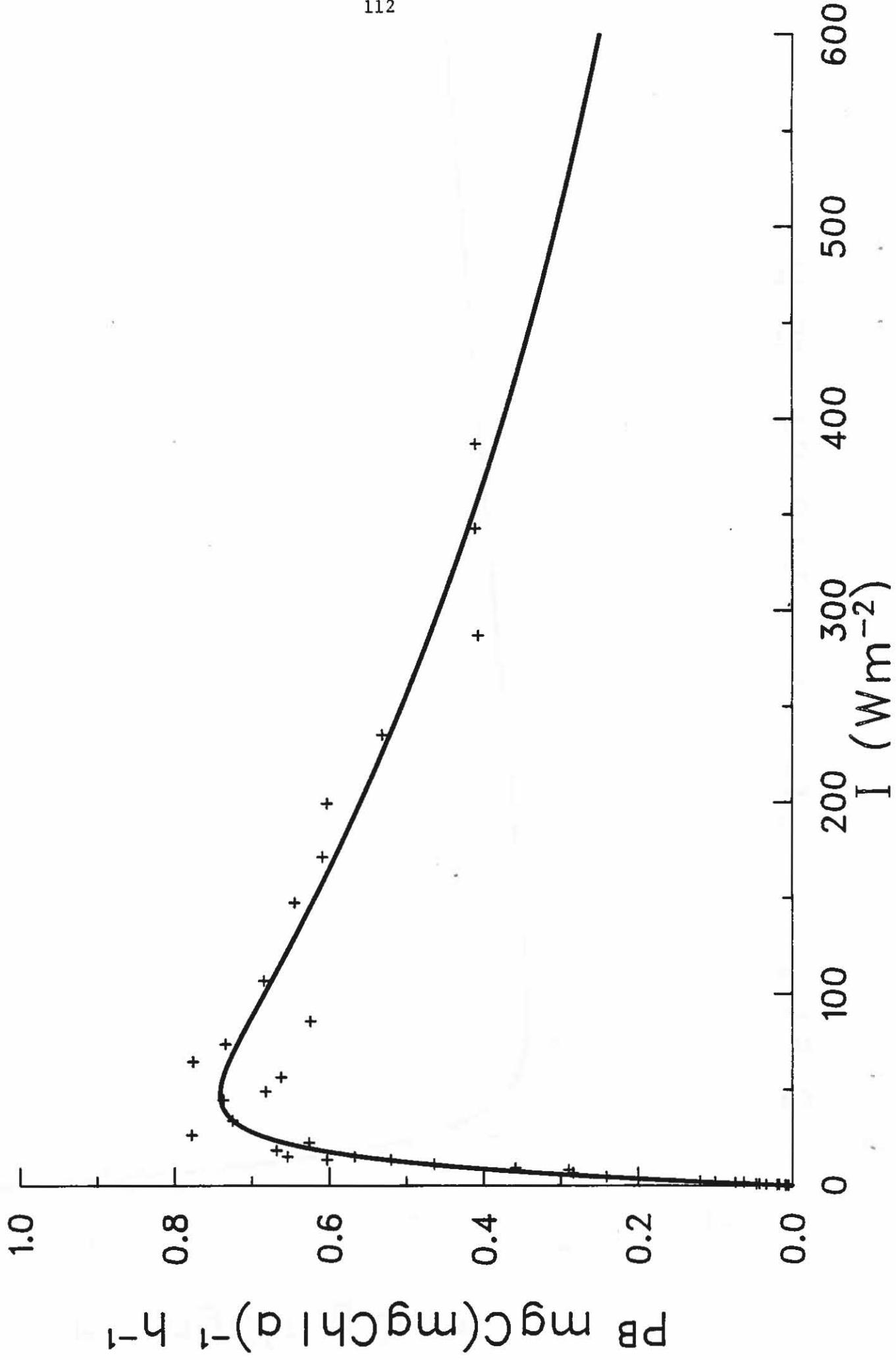
27/08/84

15 M.



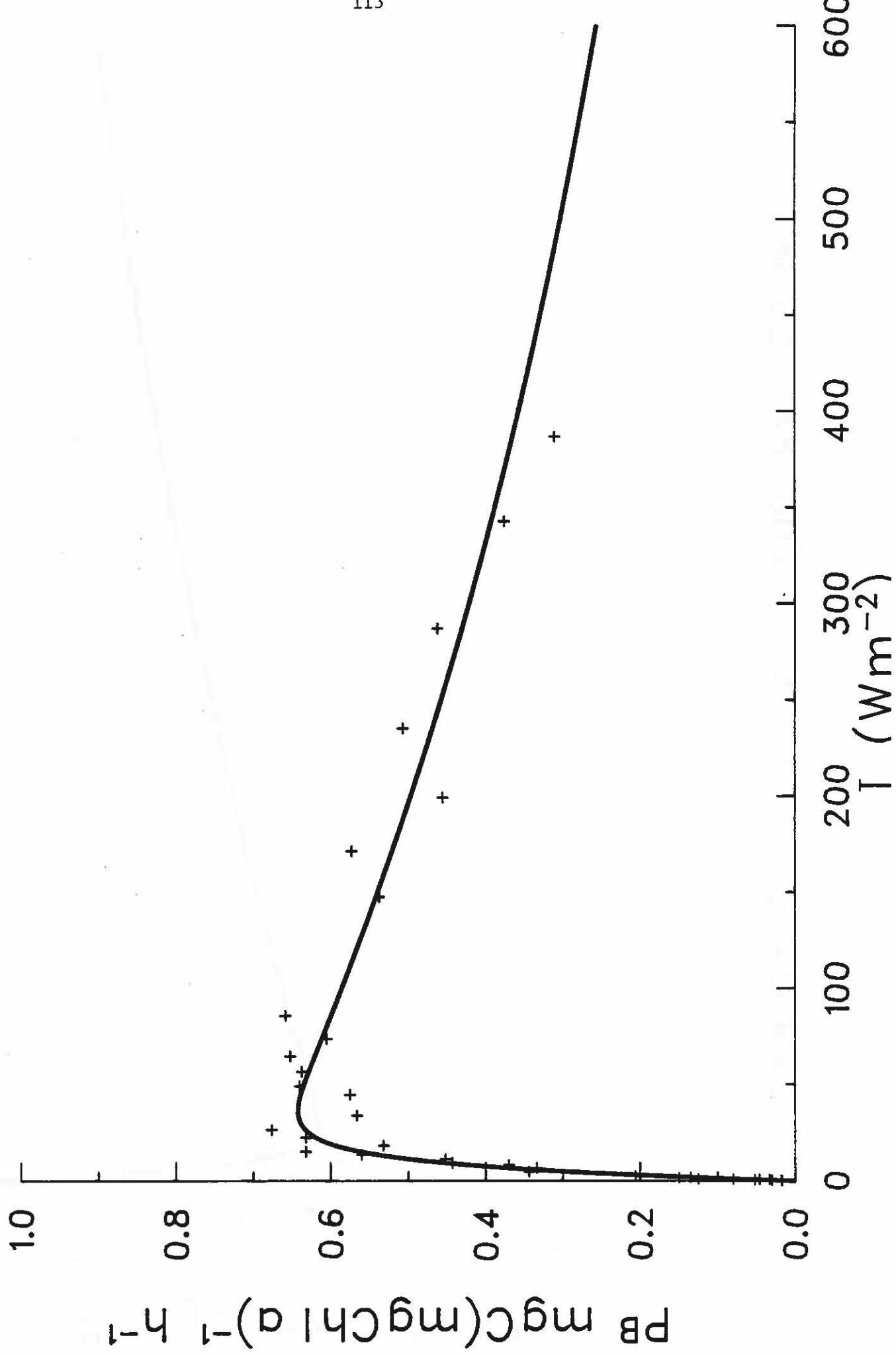
ID 8403420 STA. 14 27/08/84 22 M.

112



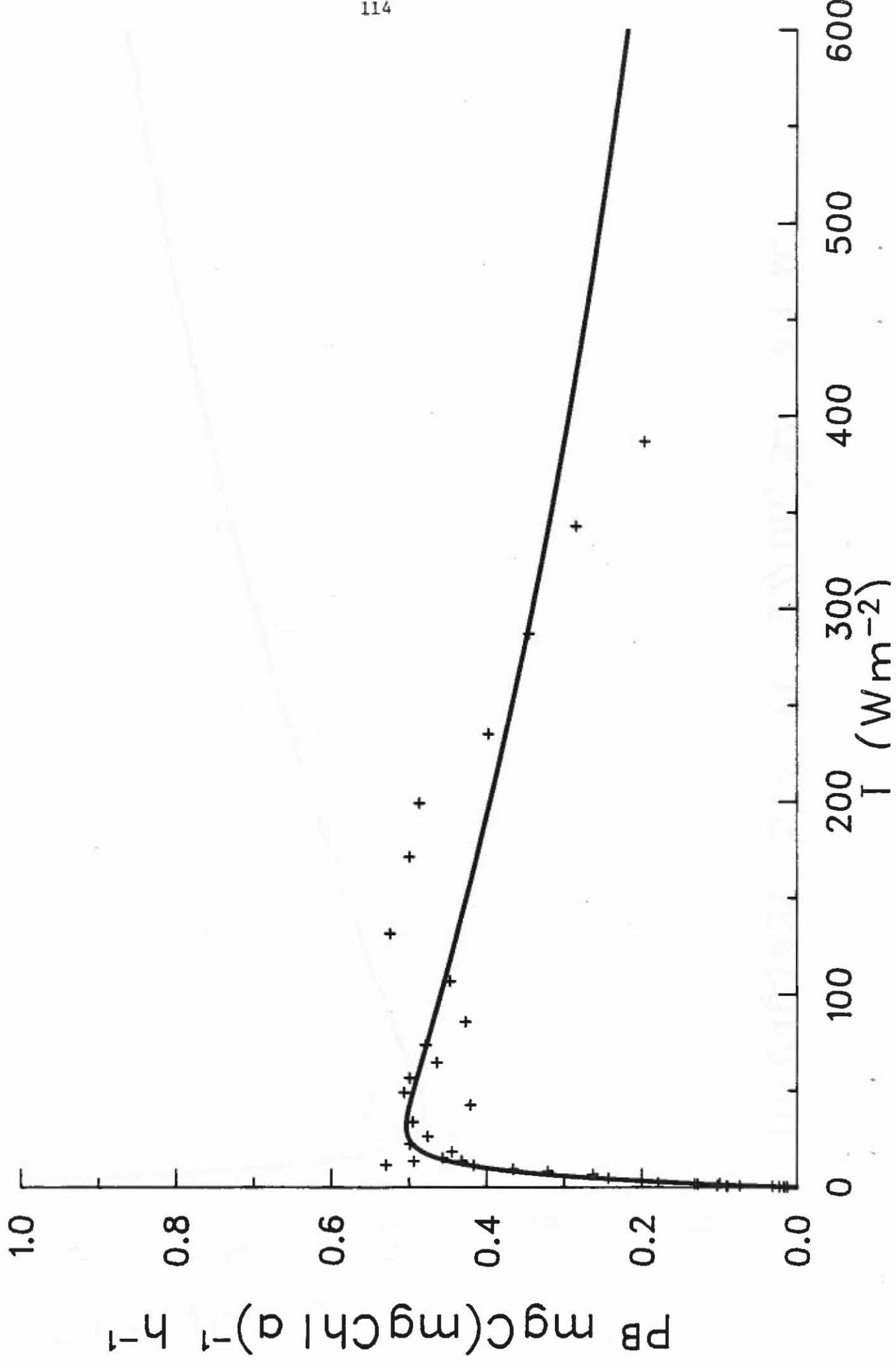
ID 8403421 STA. 14 27/08/84 40 M.

113

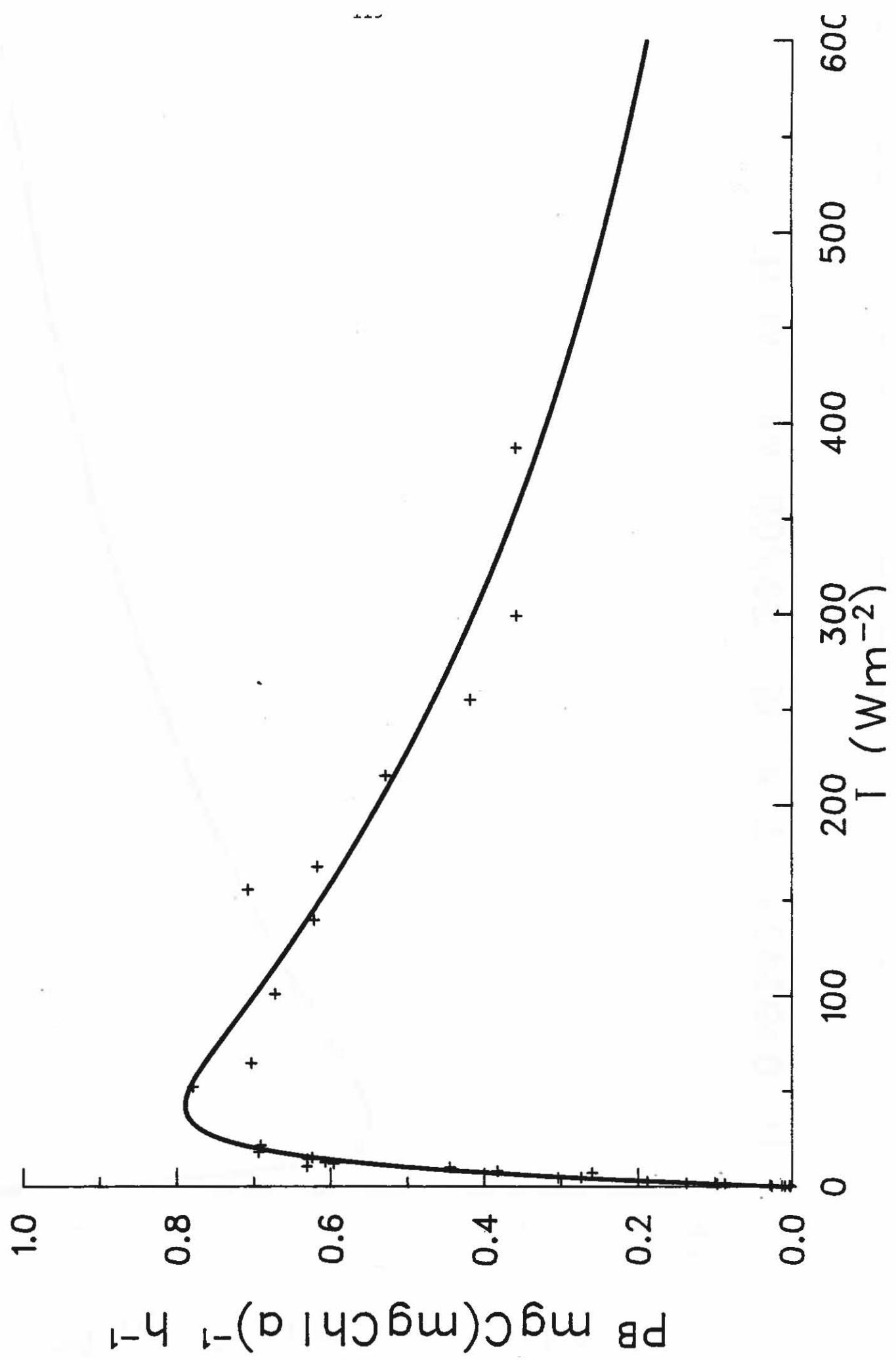


ID 8403422 STA. 14 27/08/84 55 M.

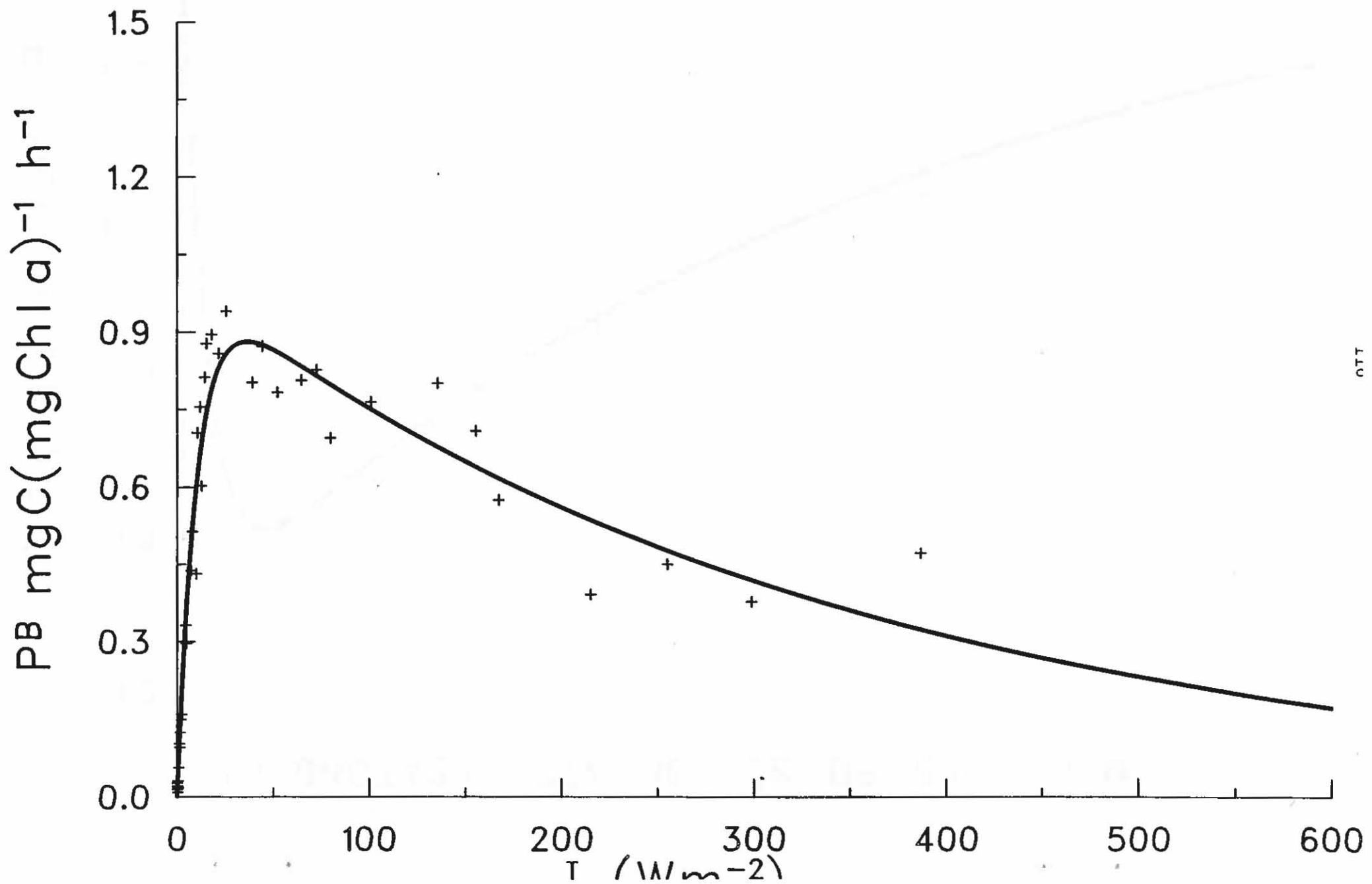
114



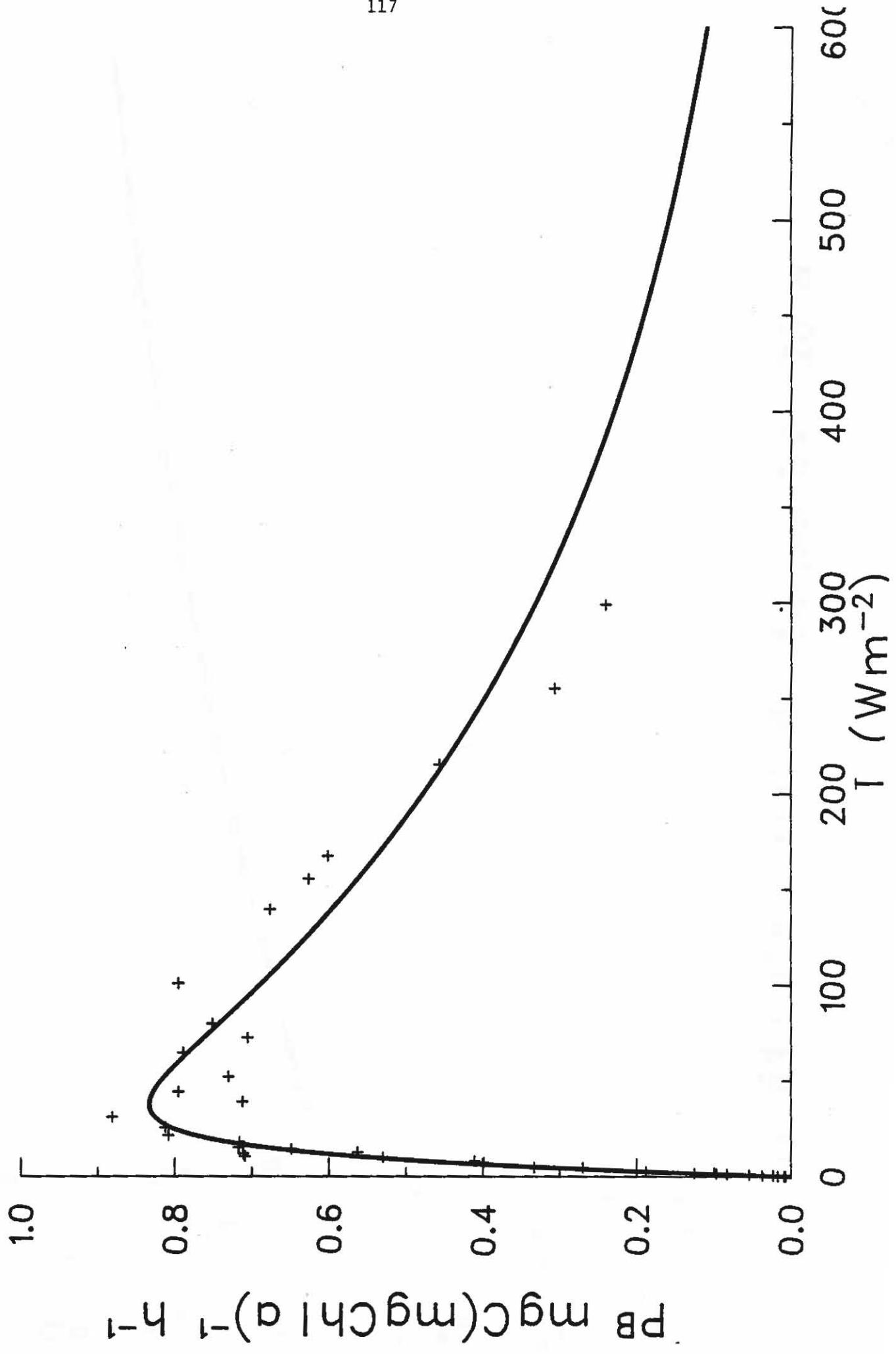
ID 8403423 STA. 16 28/08/84 5 M.



ID 8403424 STA. 16 28/08/84 15 M.

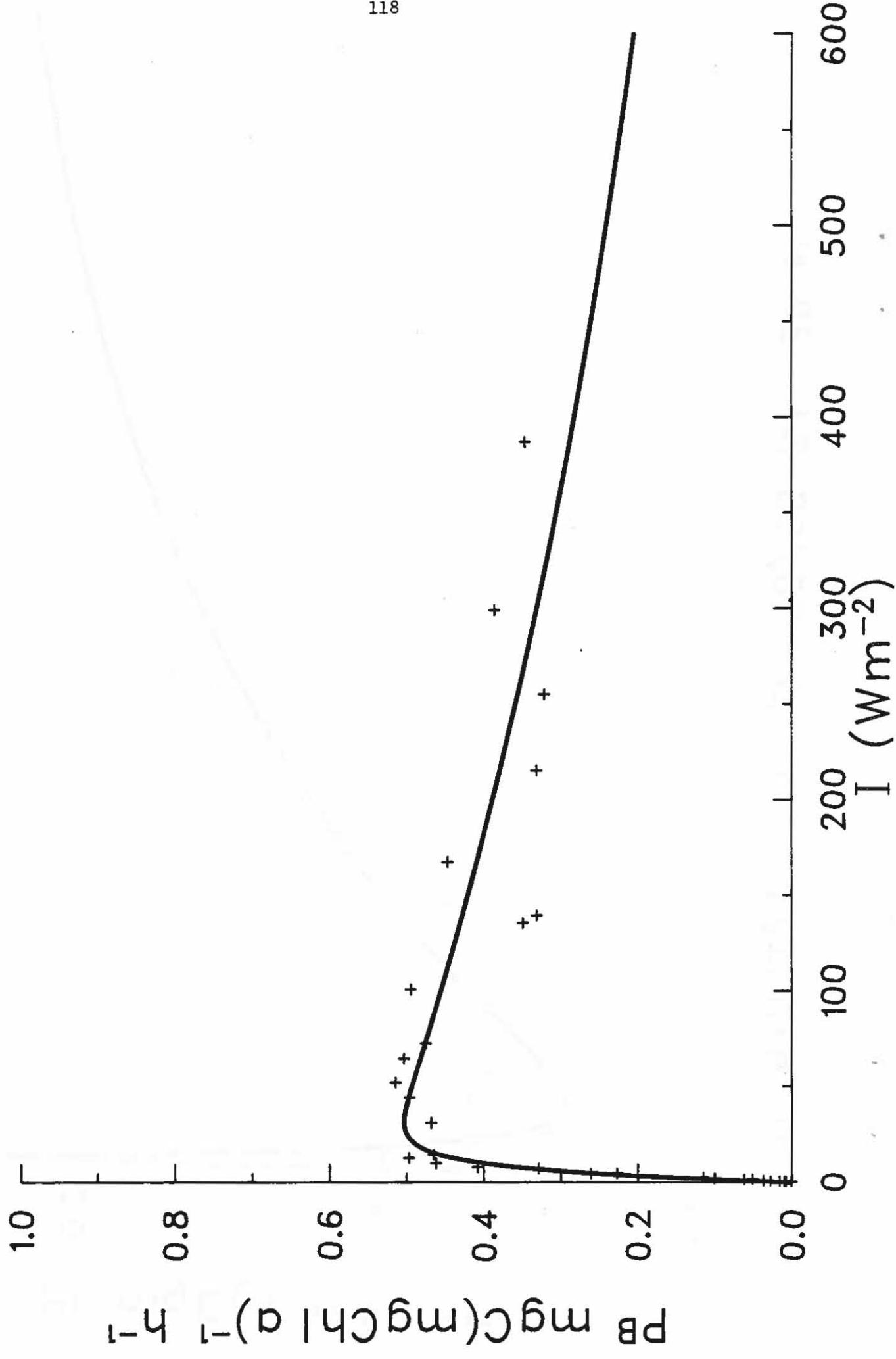


ID 8403425 STA. 16 28/08/84 20 M.



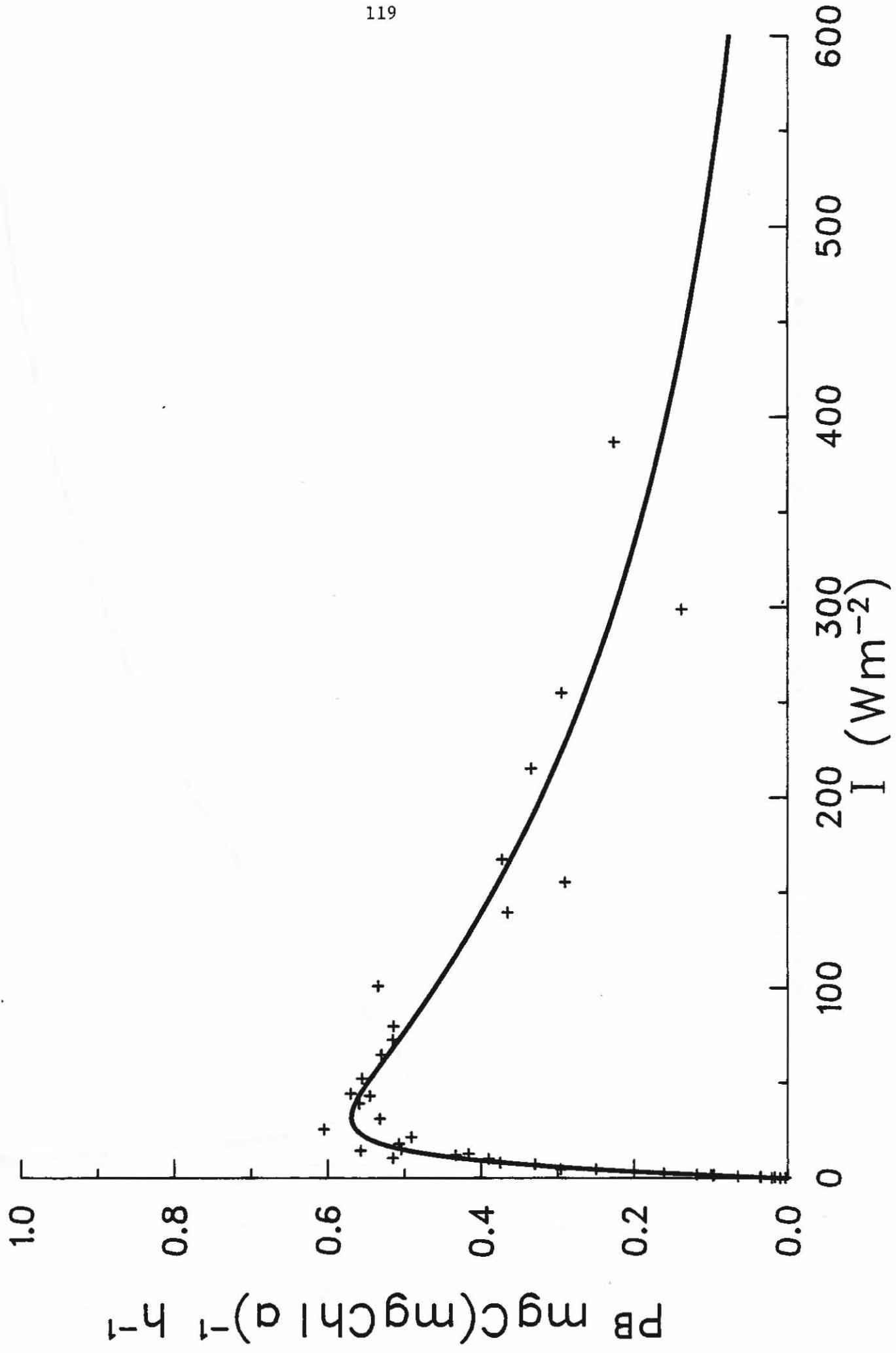
ID 8403426 STA. 16 28/08/84 30 M.

118



ID 8403427 STA. 16 28/08/84 50 M.

119

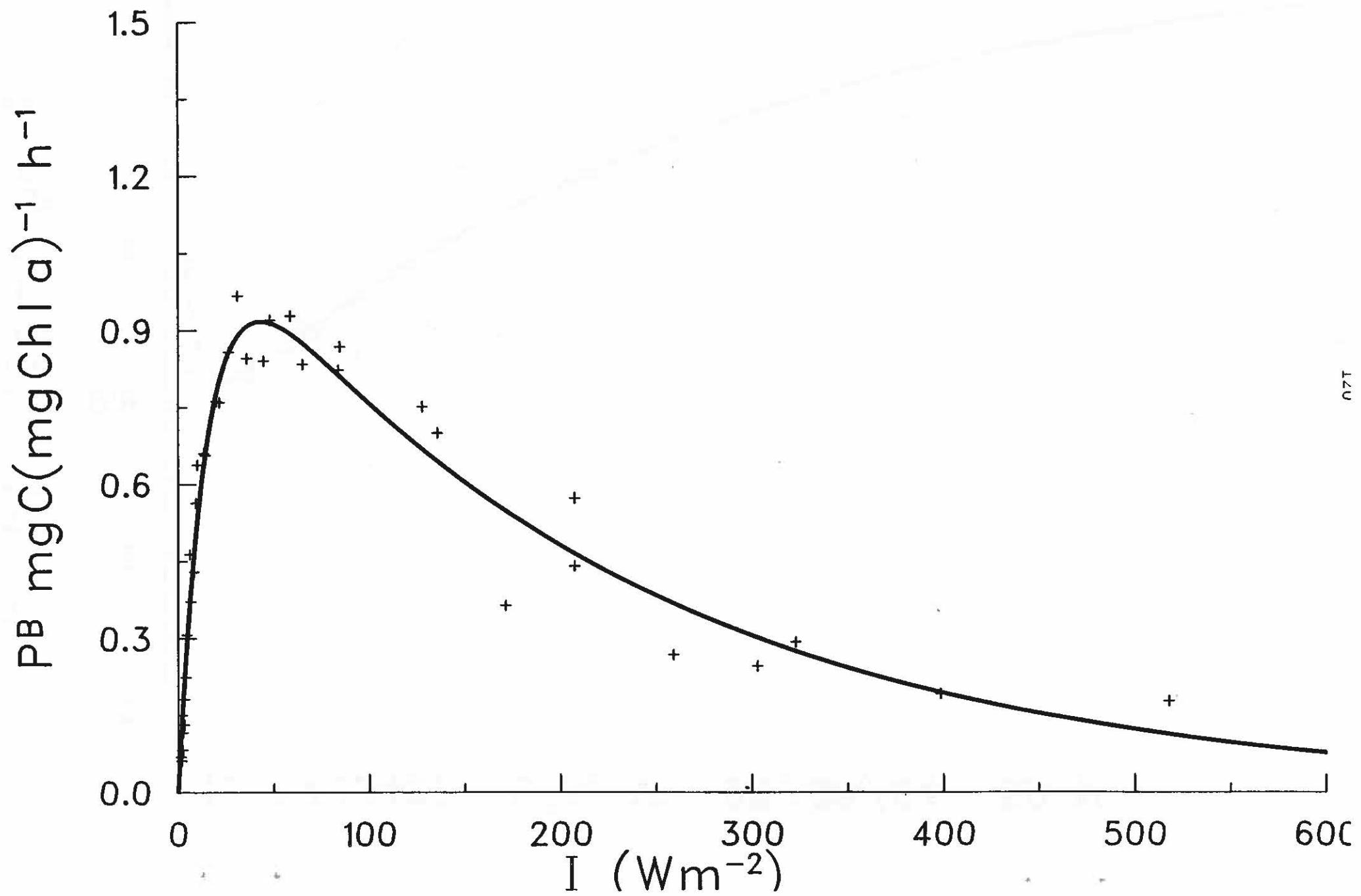


ID 8403430

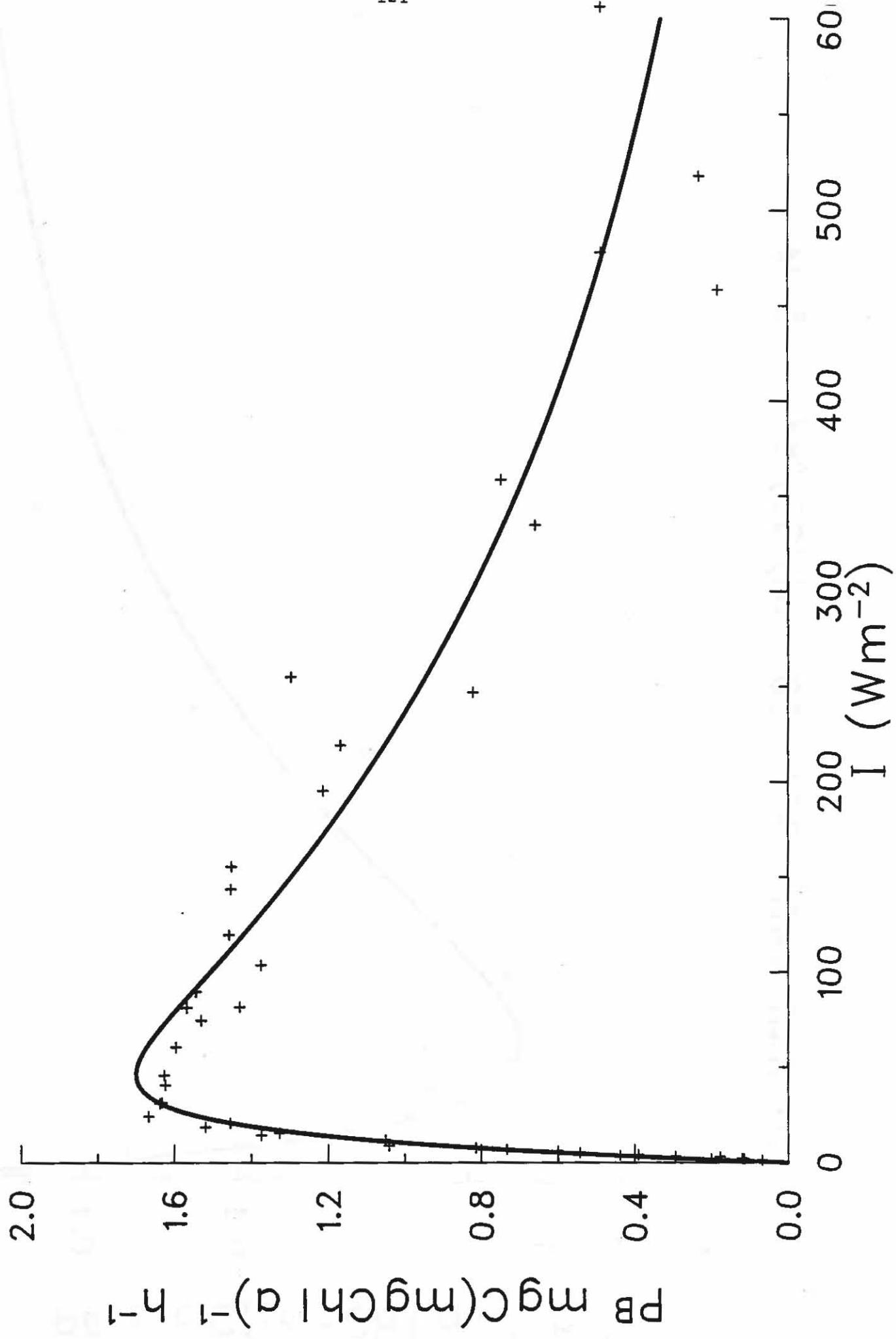
STA. 18

29/08/84

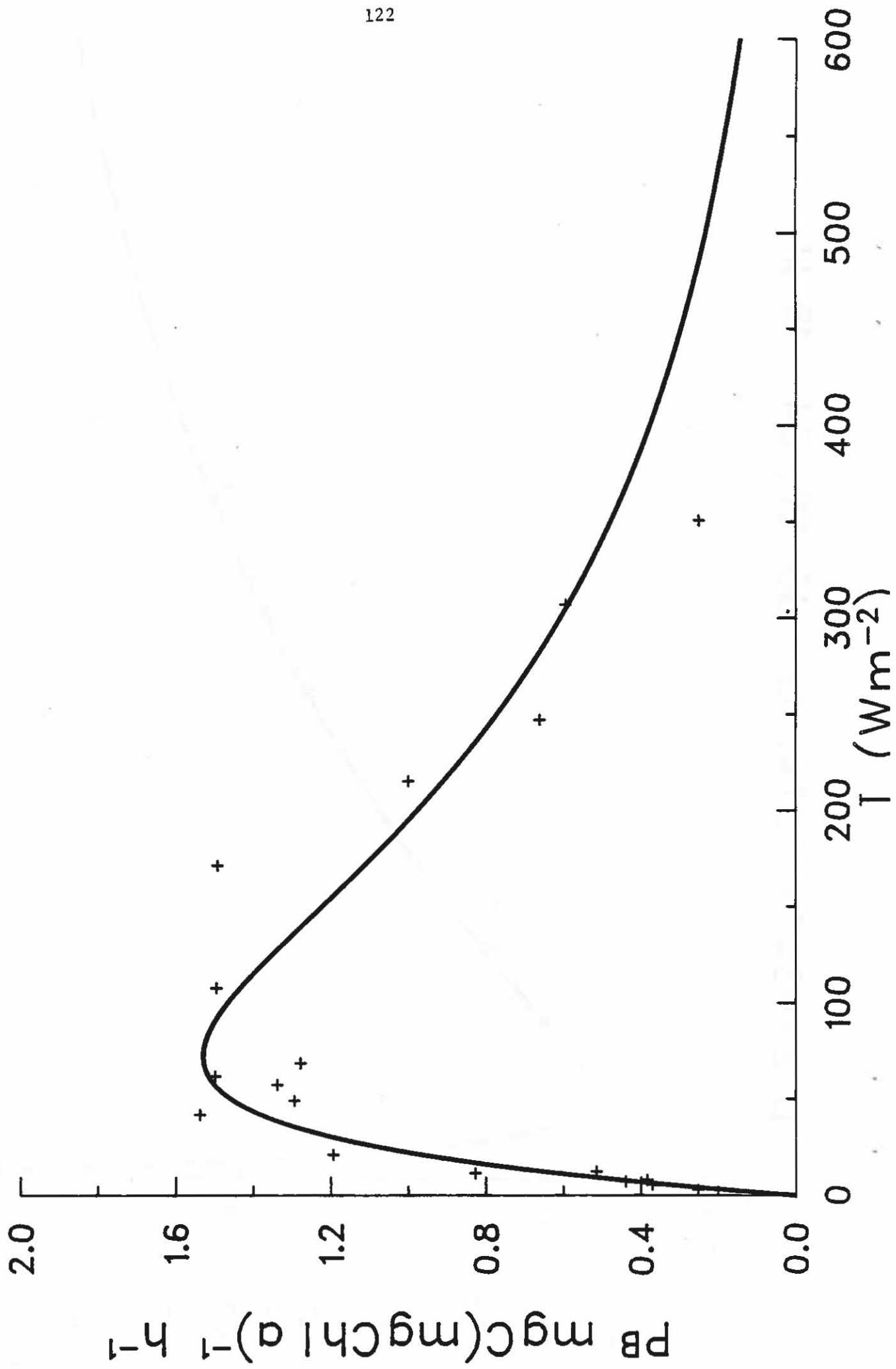
14 M.



ID 8403436 STA. 19 30/08/84 19 M.

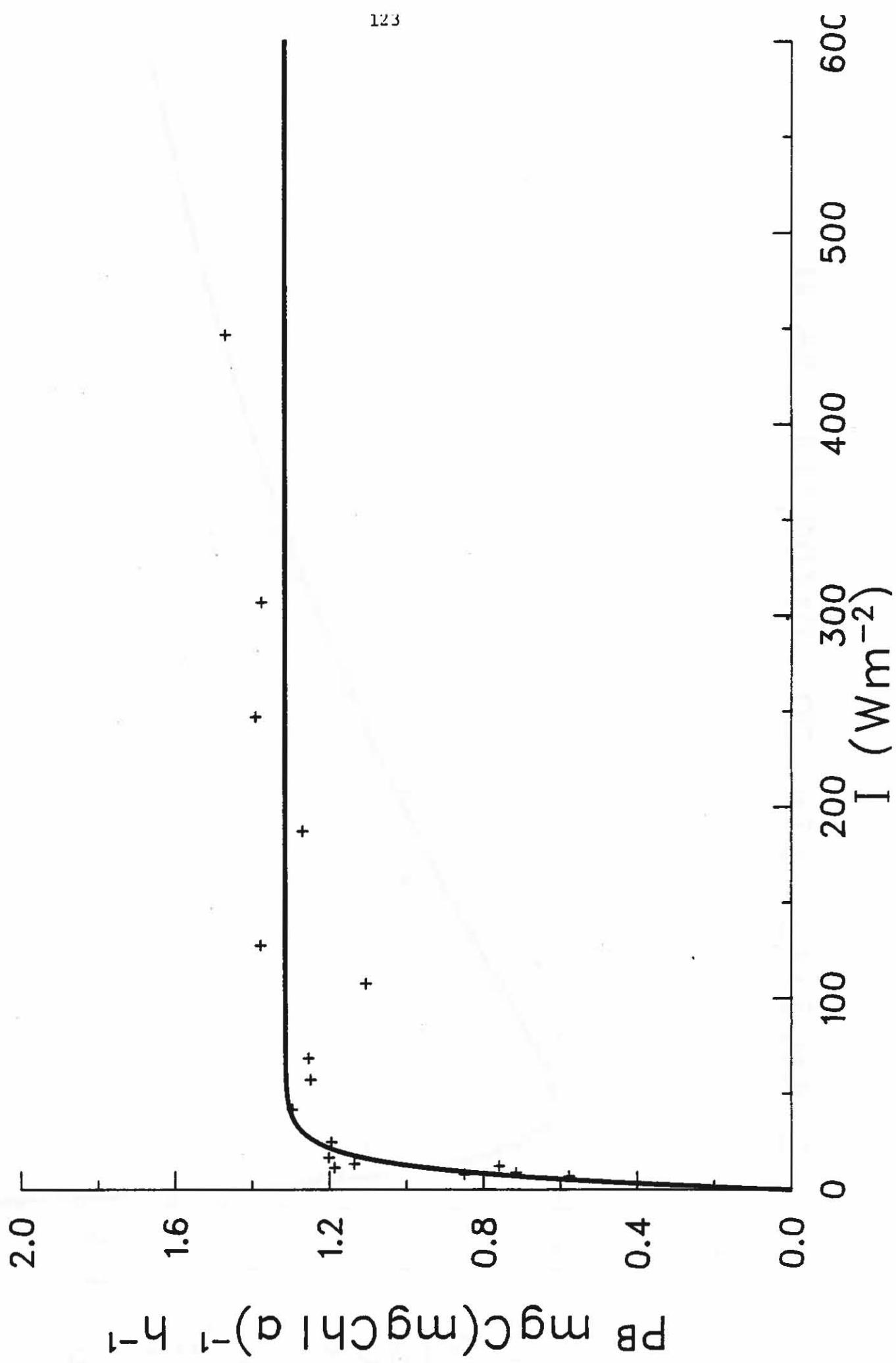


ID 8403440 STA. 20 01/09/84 5 M.



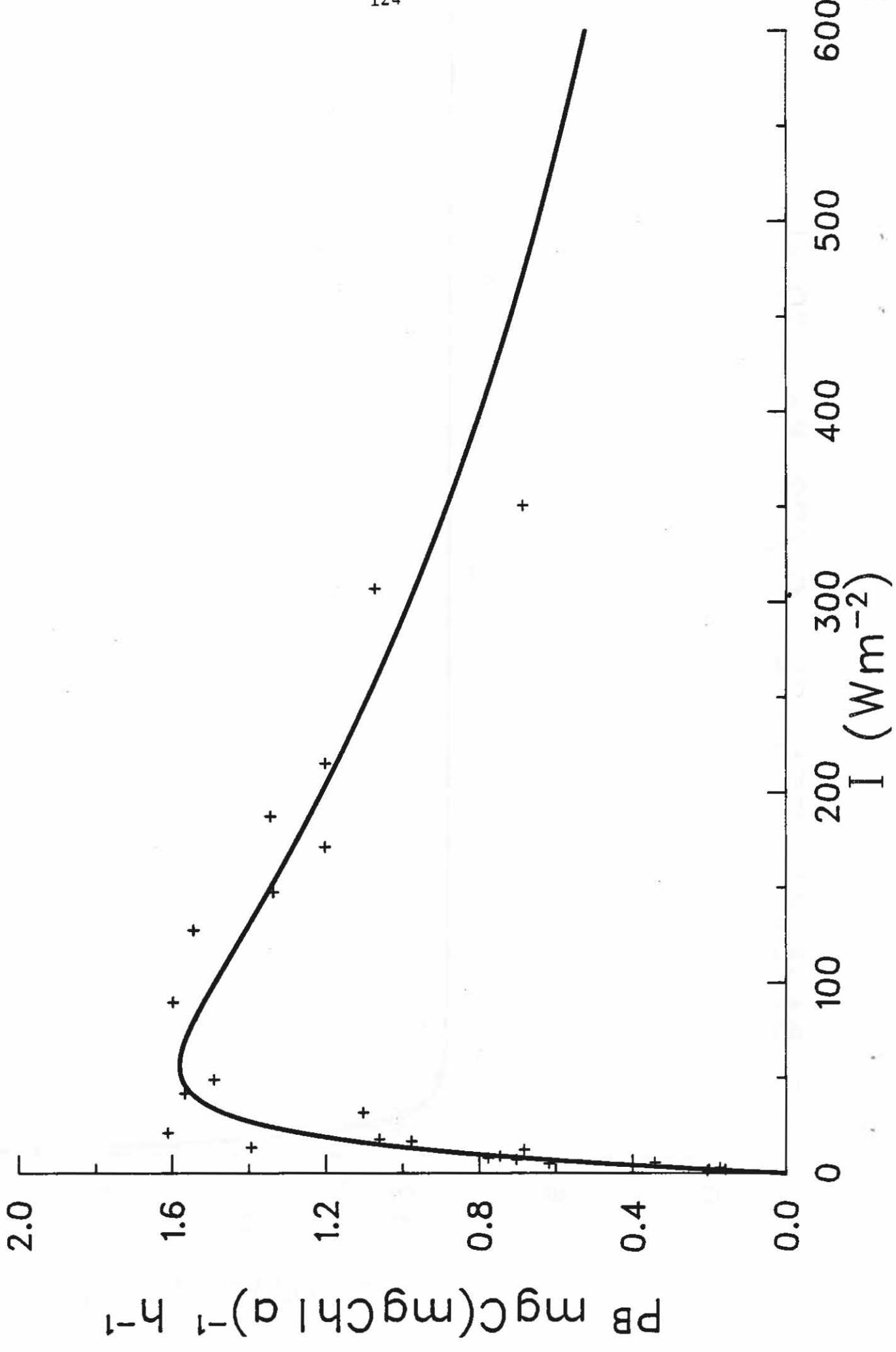
ID 8403441 STA. 20 01/09/84 20 M.

123

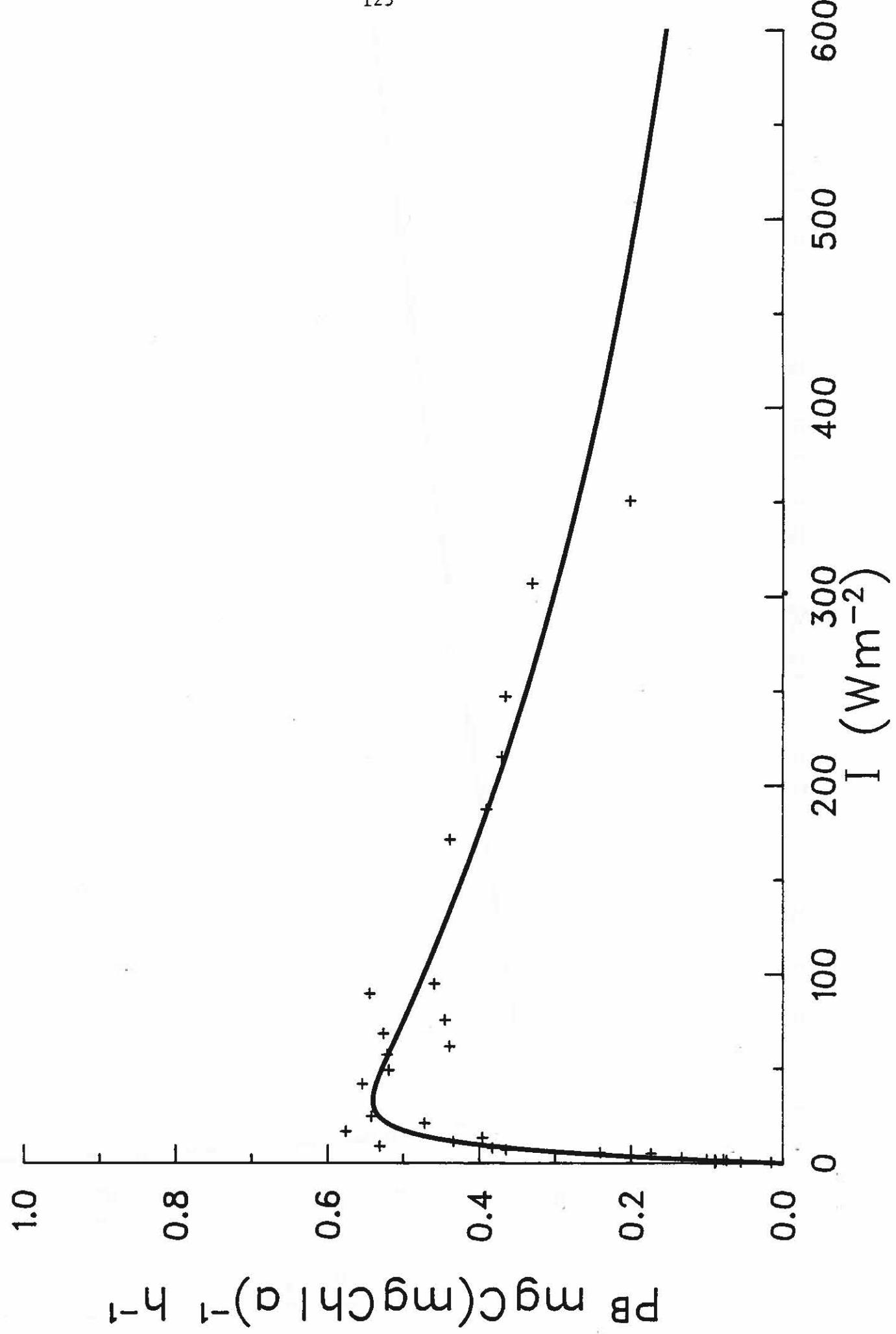


ID 8403442 STA. 20 01/09/84 25 M.

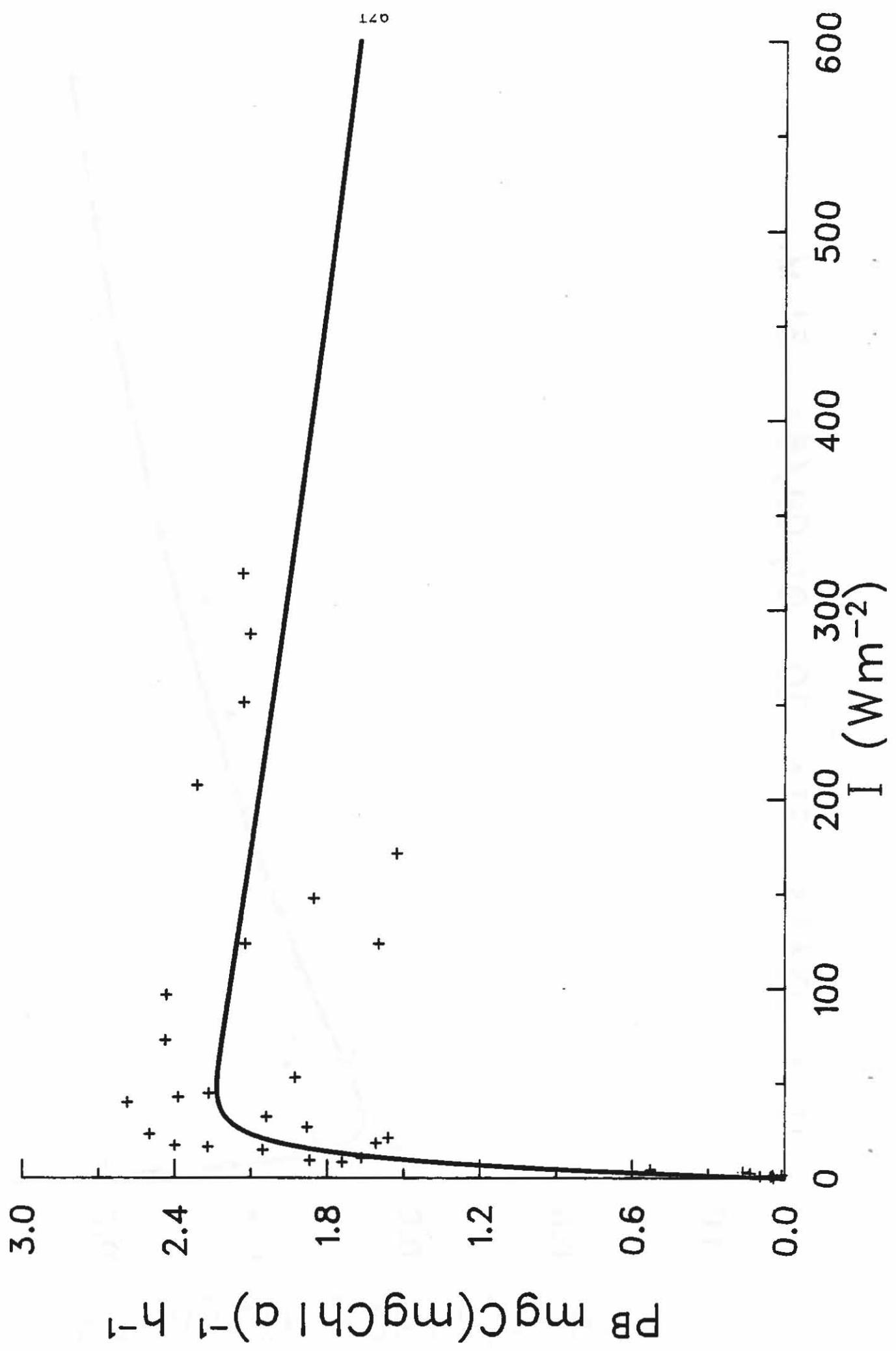
124



ID 8403443 STA. 20 01/09/84 31 M.

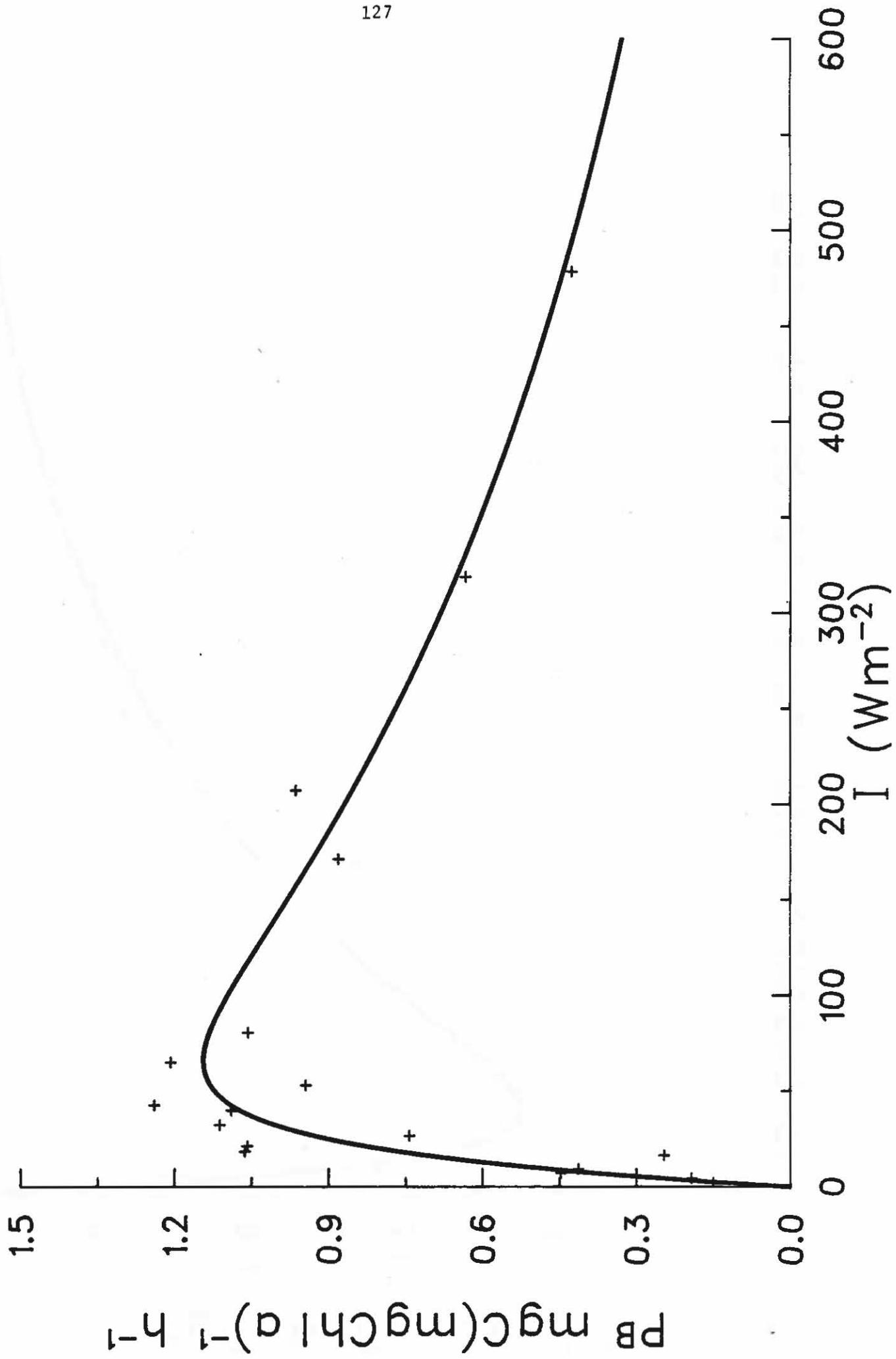


ID 8403448 STA. TM-9 02/09/84 5 M.



ID 8403449 STA. TM-9 02/09/84 16 M.

127

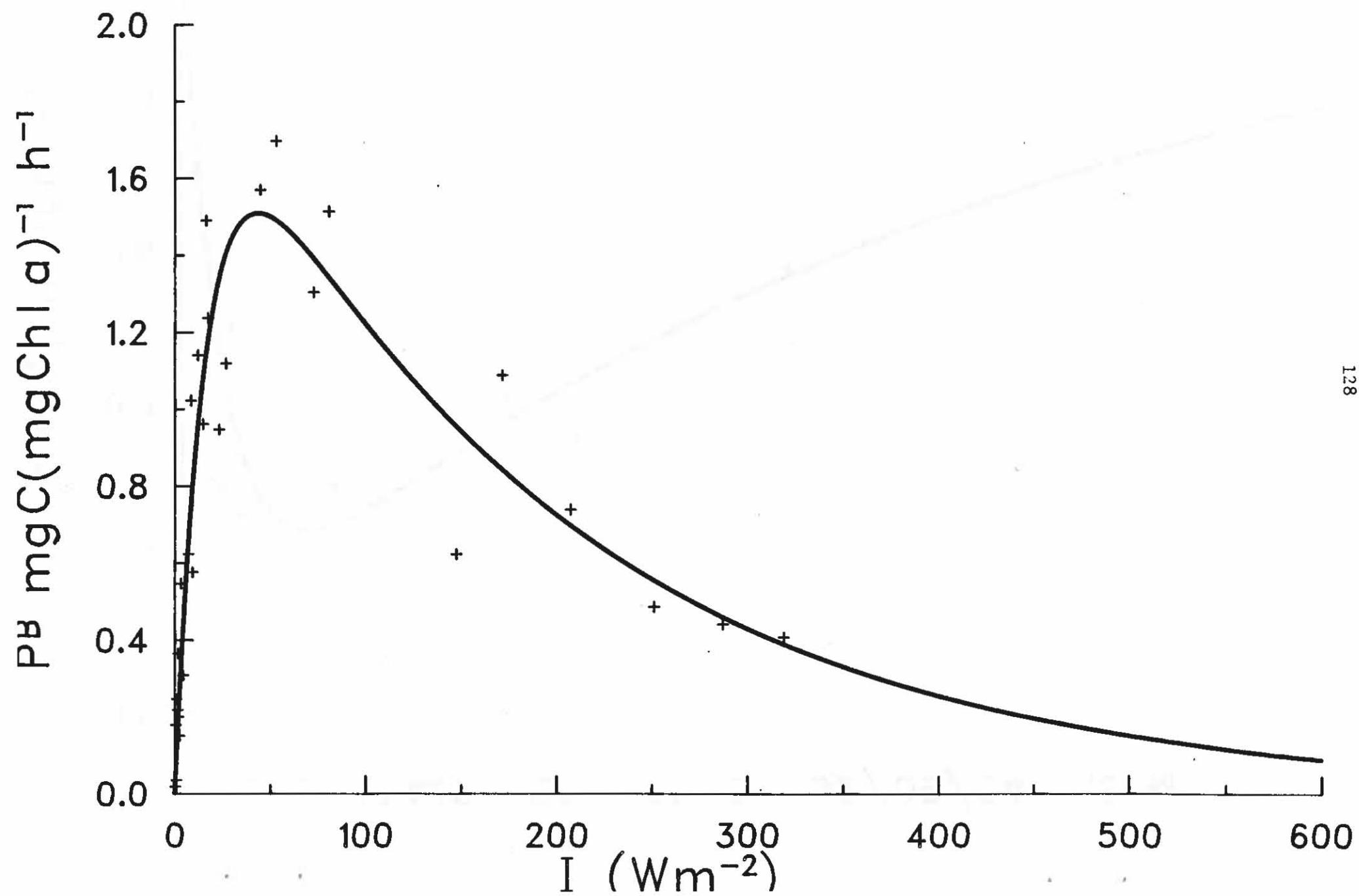


ID 8403450

STA. TM-9

02/09/84

25 M.

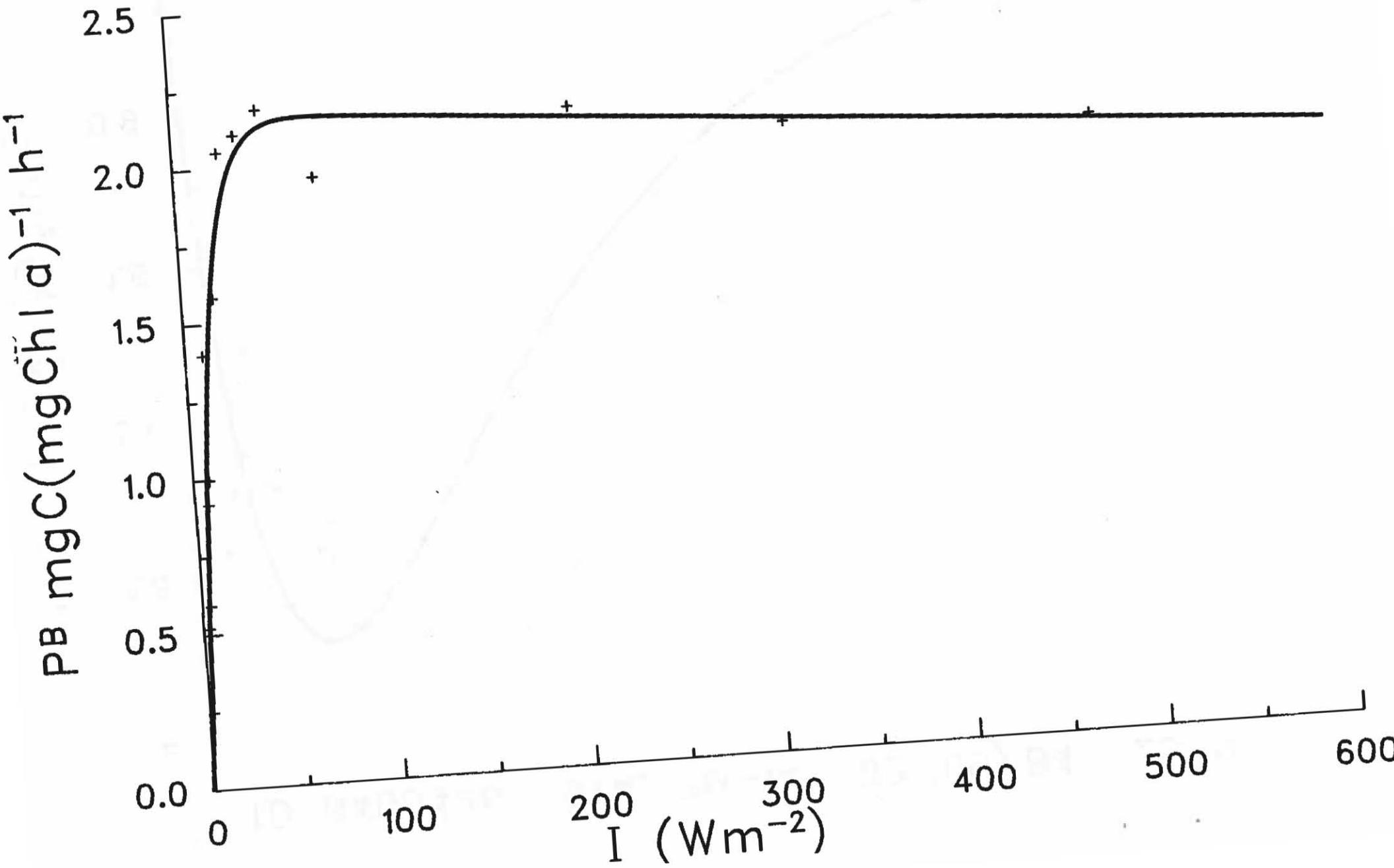


ID 8403445

STA. TM-14

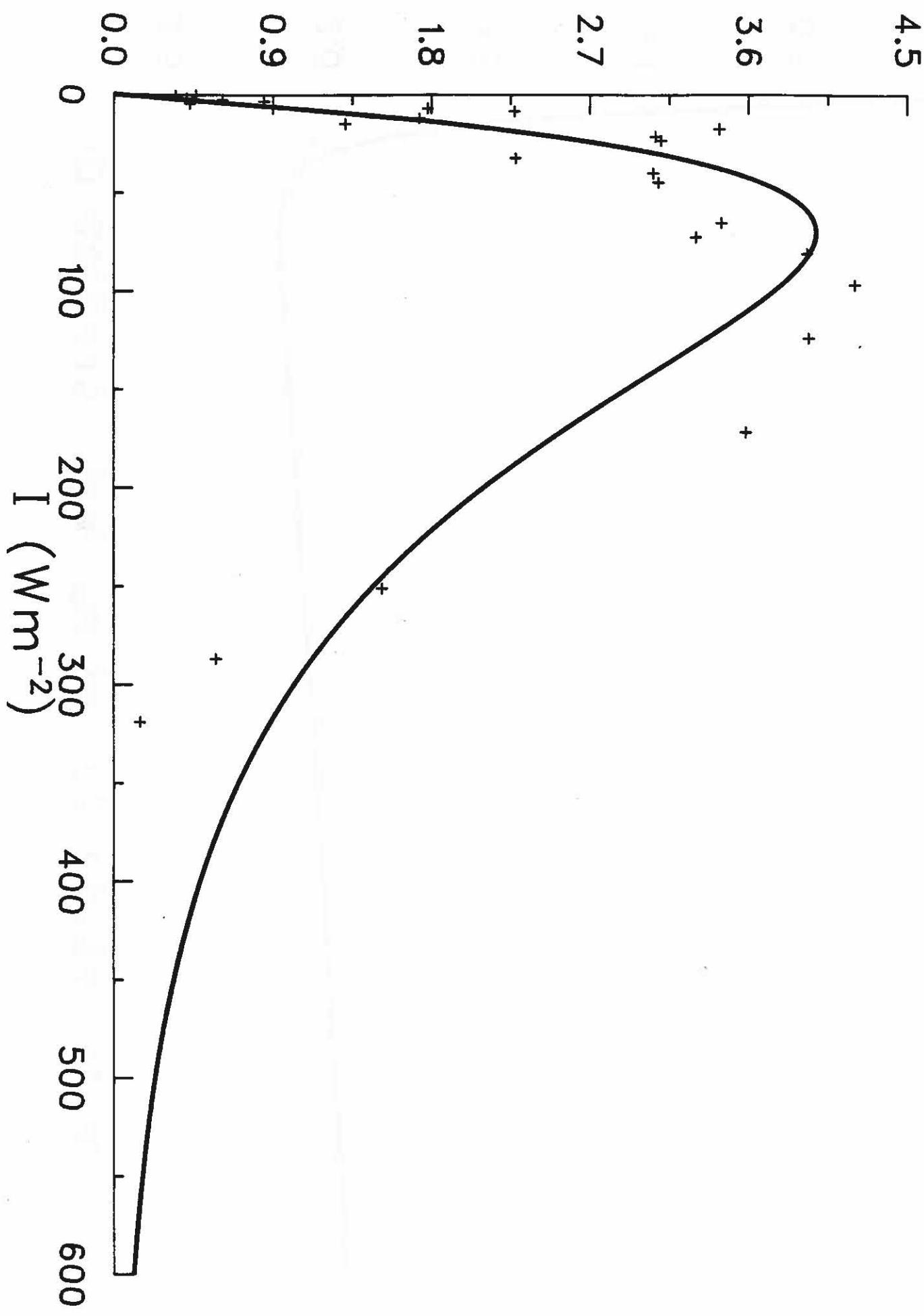
02/09/84

15 M.

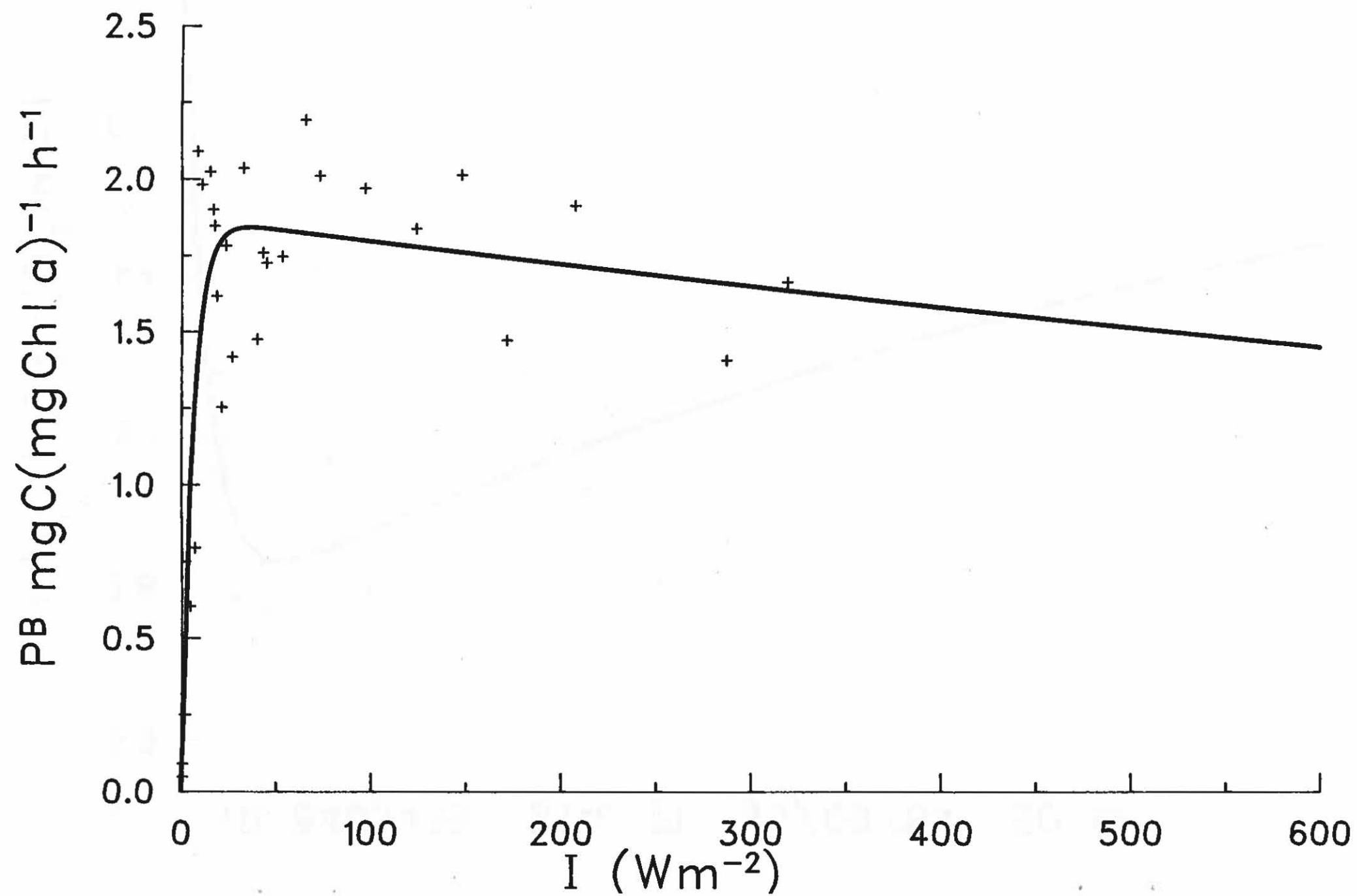


ID 8403446 STA. TM-14 02/09/84 25 M.

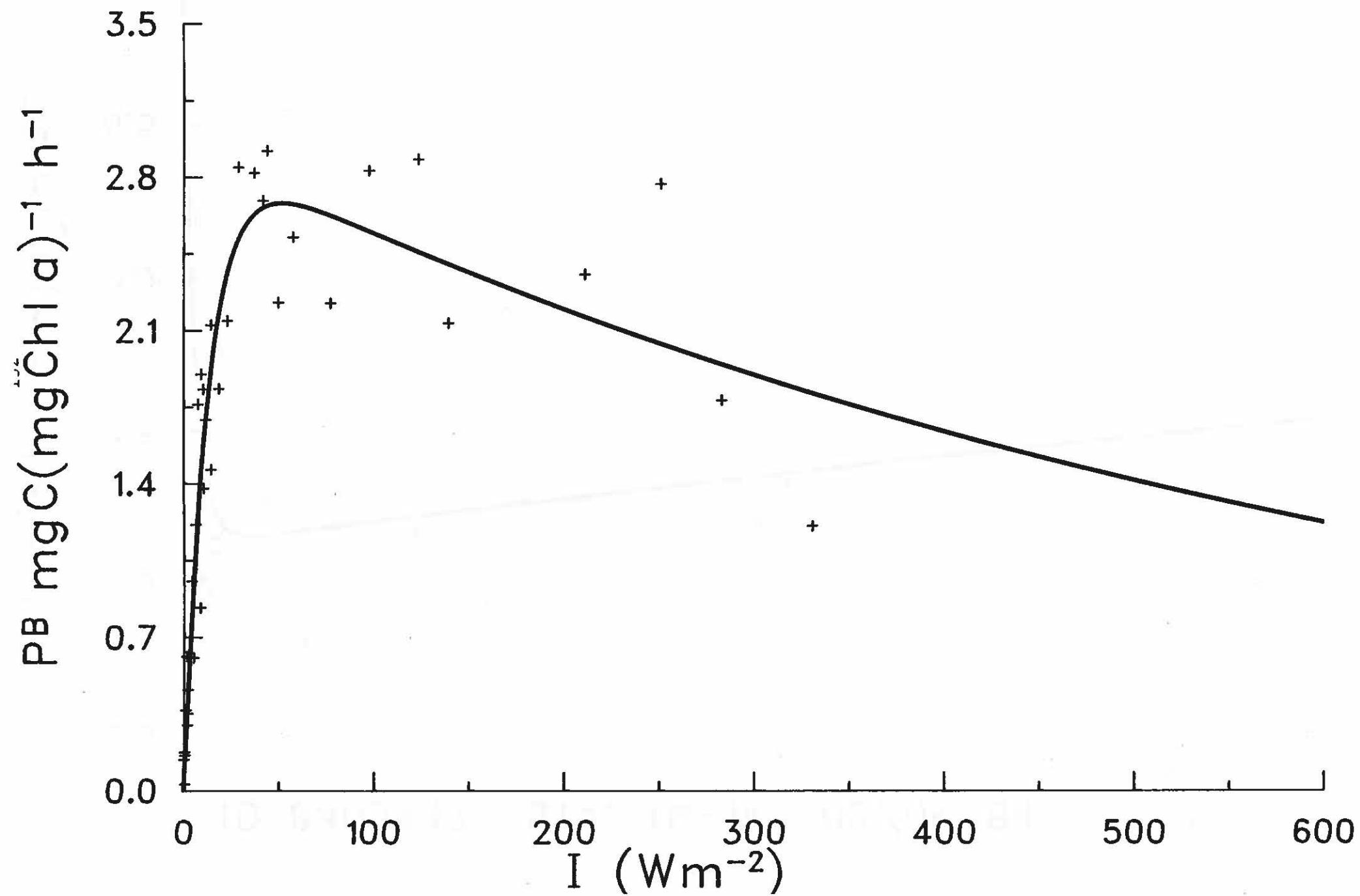
PB mgC(mgChl a) $^{-1}$  h $^{-1}$



ID 8403447 STA. TM-14 02/09/84 5 M.

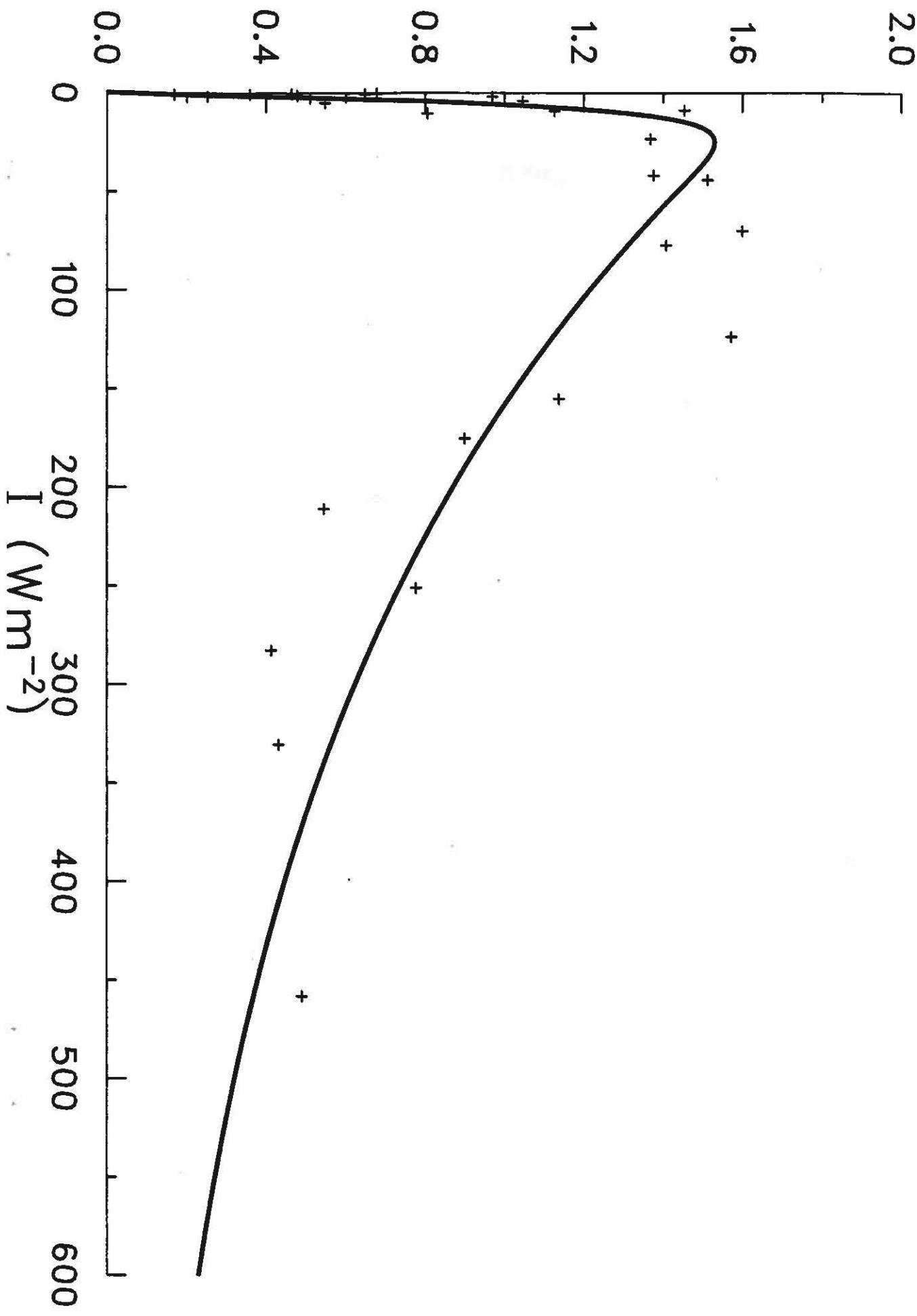


ID 8403455 STA. 21 03/09/84 50 M.



ID 8403456 STA.. 21 03/09/84 O M.

PB mgC(mgChl a) $^{-1}$  h $^{-1}$



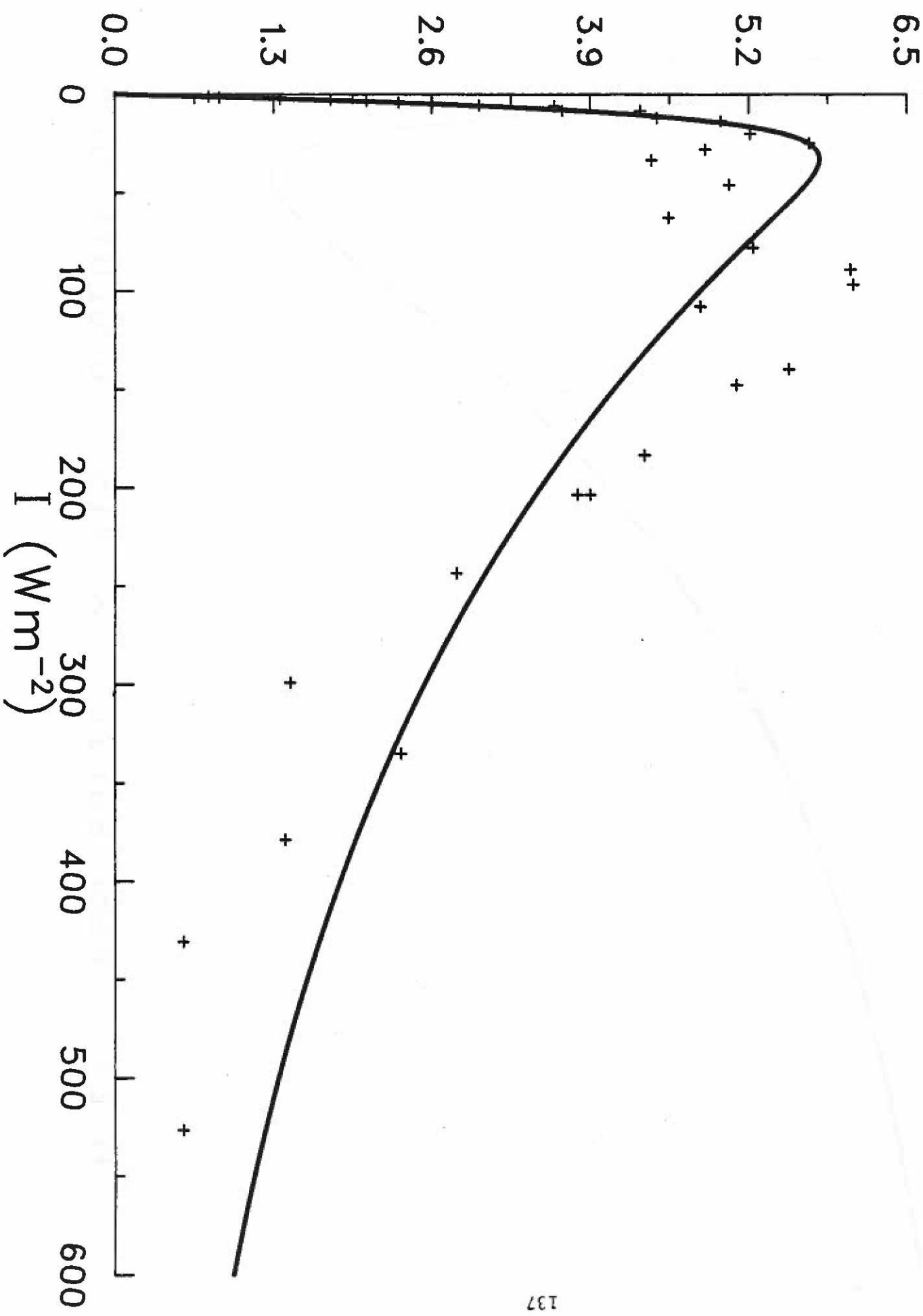
**BLANK**

Solid Line to Fit Oxygen PI Data

**BLANK**

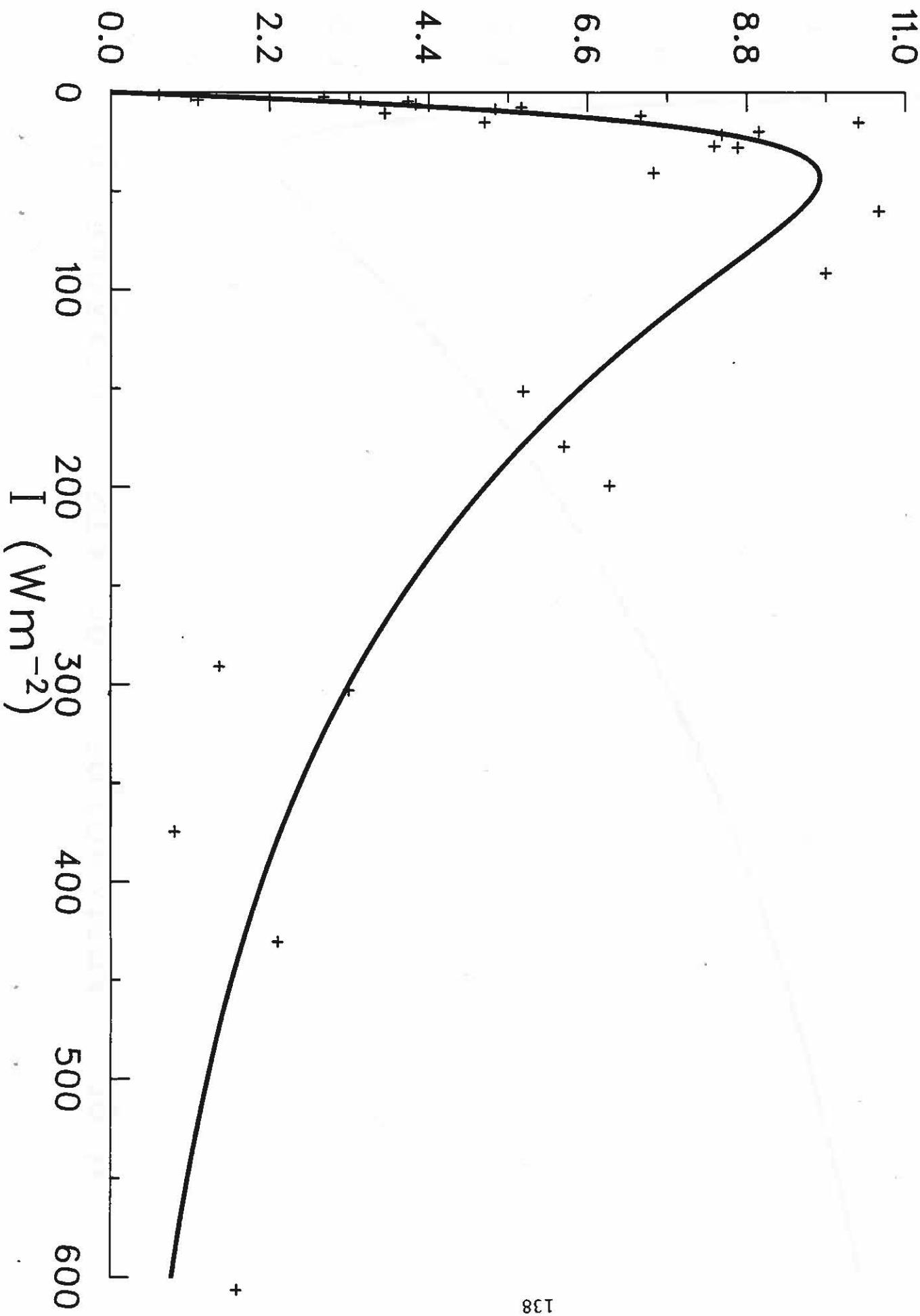
ID 8403439 STA. 19 30/08/1984 19 M

PB  $\text{mgO}_2(\text{mgChl a})^{-1} \text{ h}^{-1}$



ID 8407800 STA. 8 23/08/1984 42 M

PB  $\text{mg O}_2(\text{mg Chl a})^{-1} \text{ h}^{-1}$

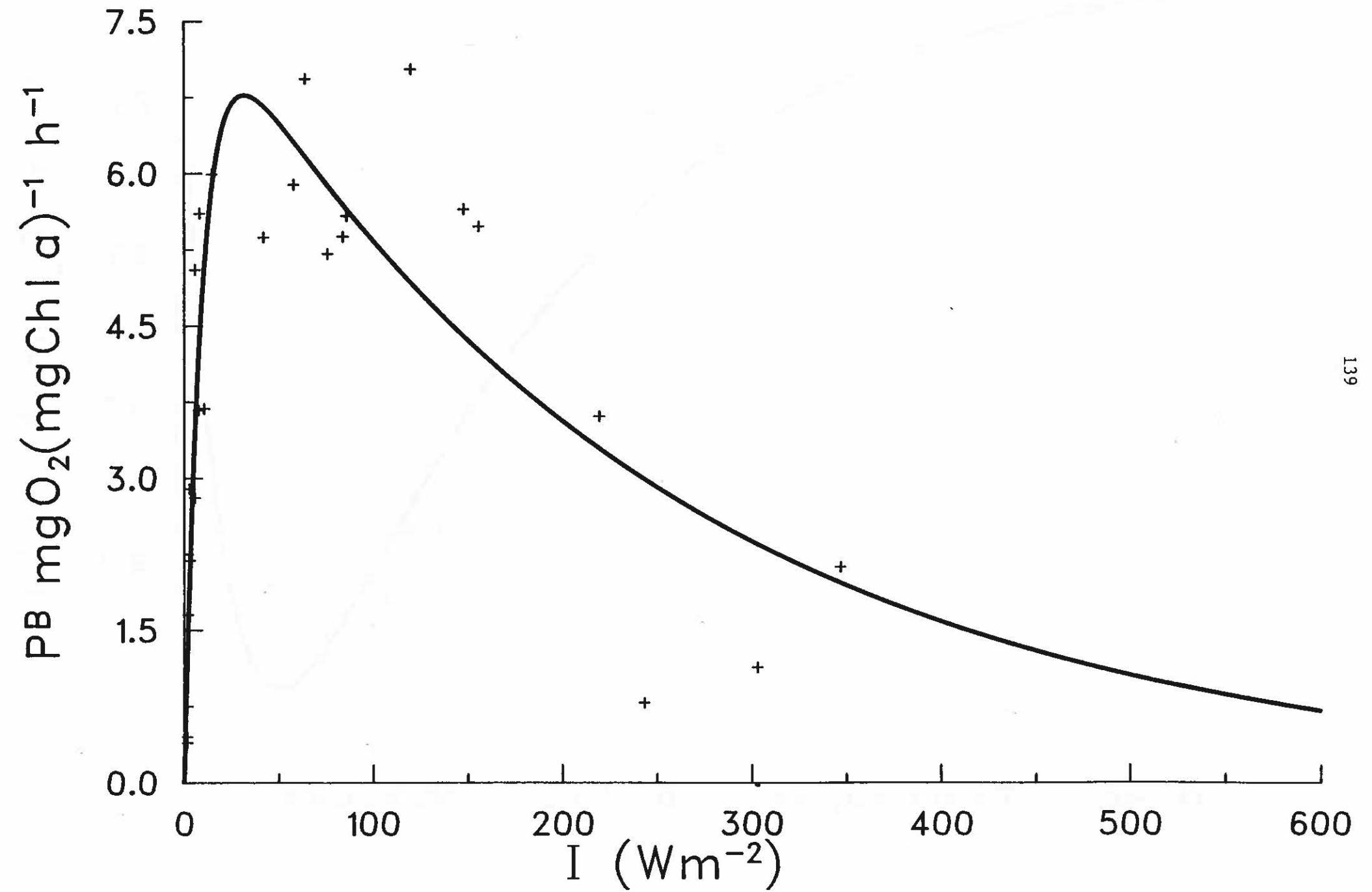


ID 8403433

STA. 18

29/08/1984

14 M



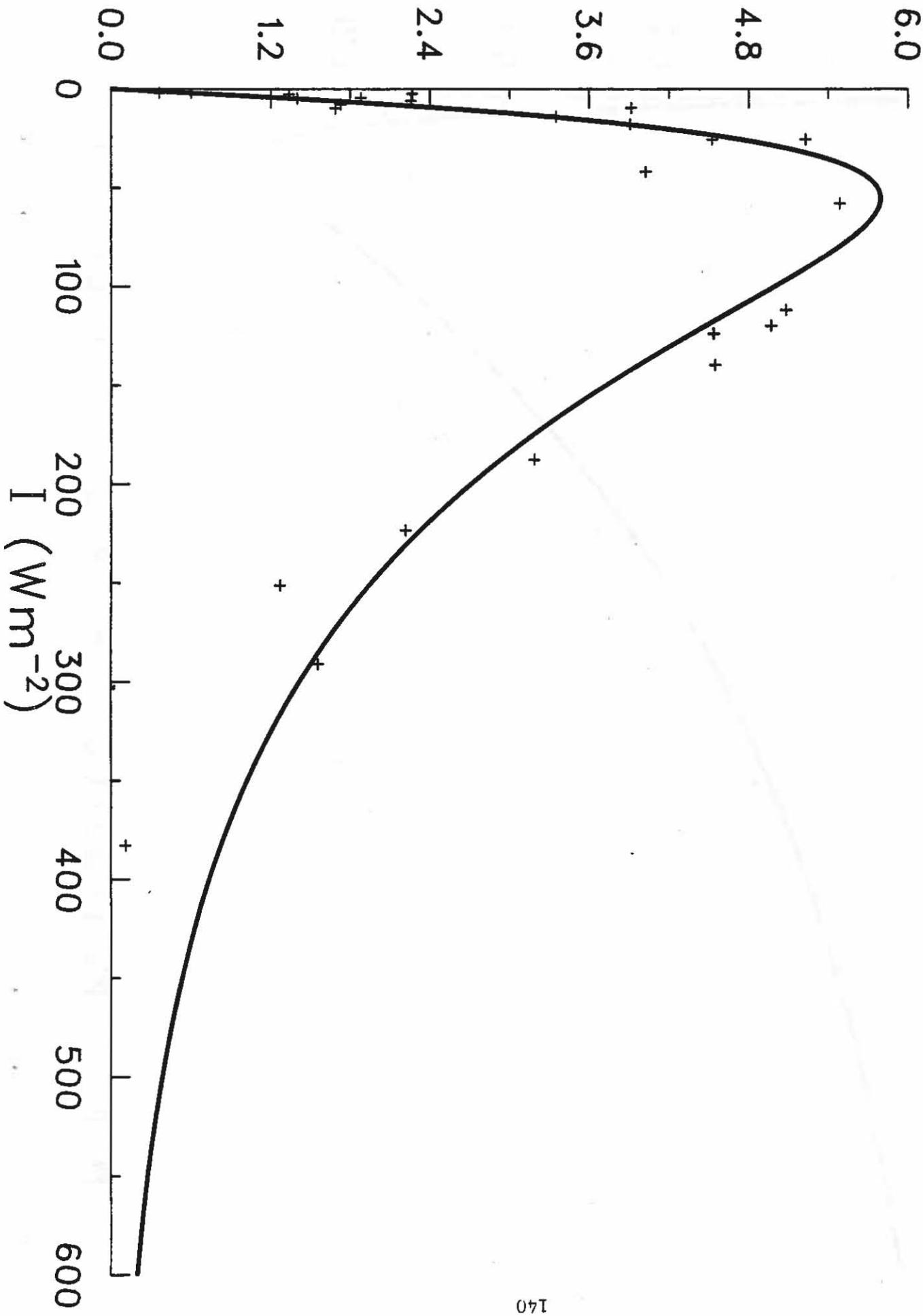
ID 8403406

STA. 9

24/08/1984

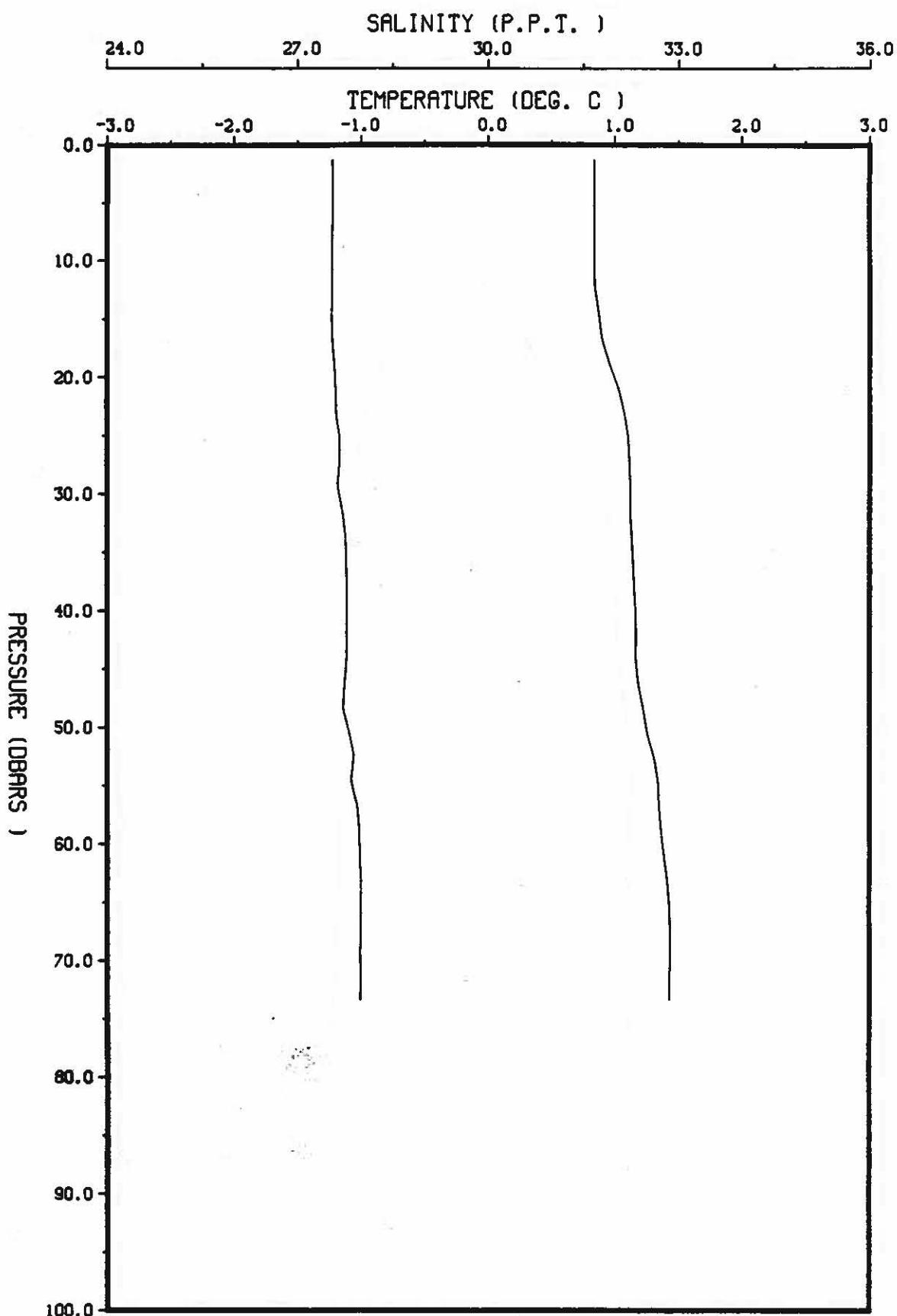
25 M

PB  $\text{mg O}_2(\text{mg Chl a})^{-1} \text{ h}^{-1}$



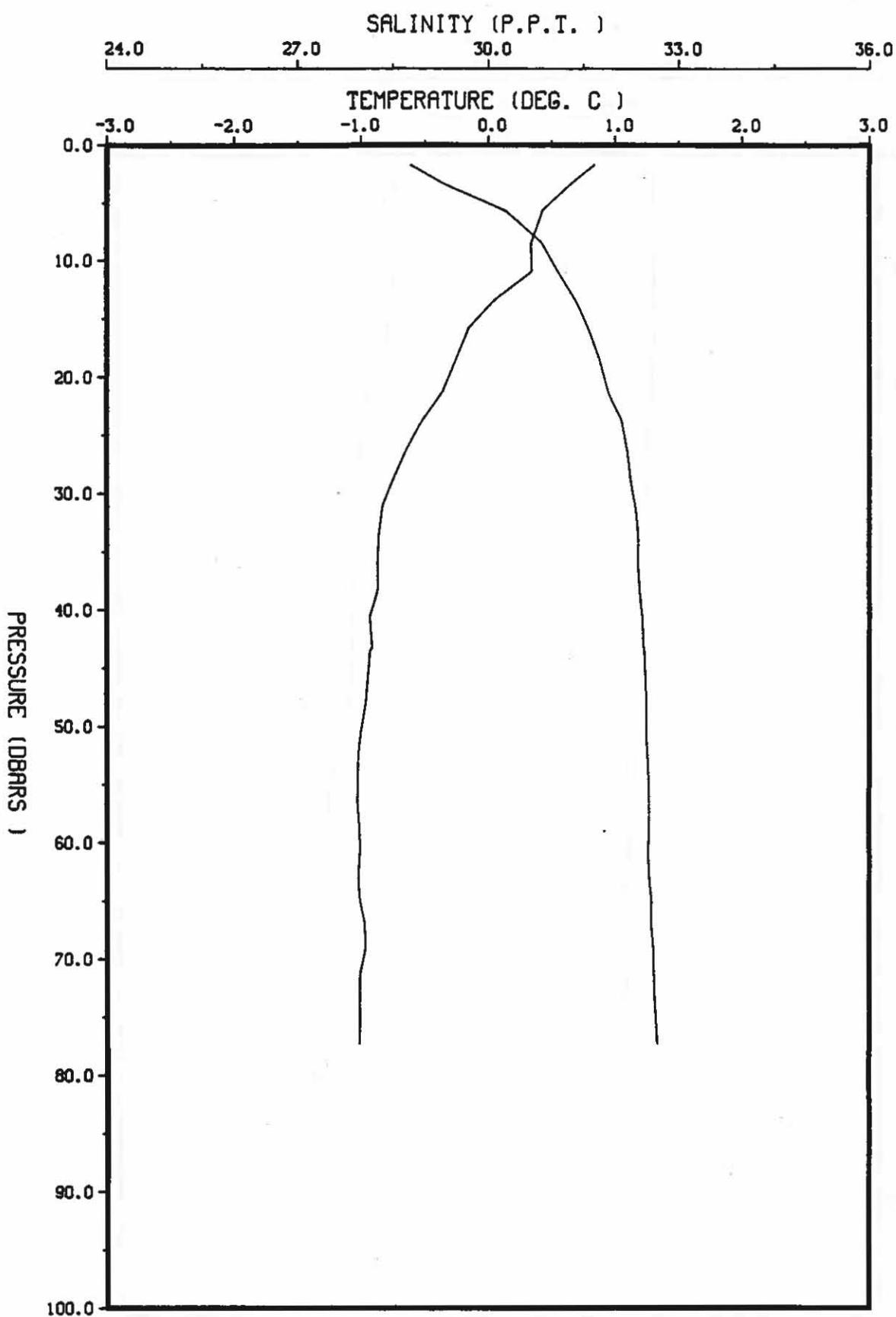
**C.T.D. Profile**

**BLANK**

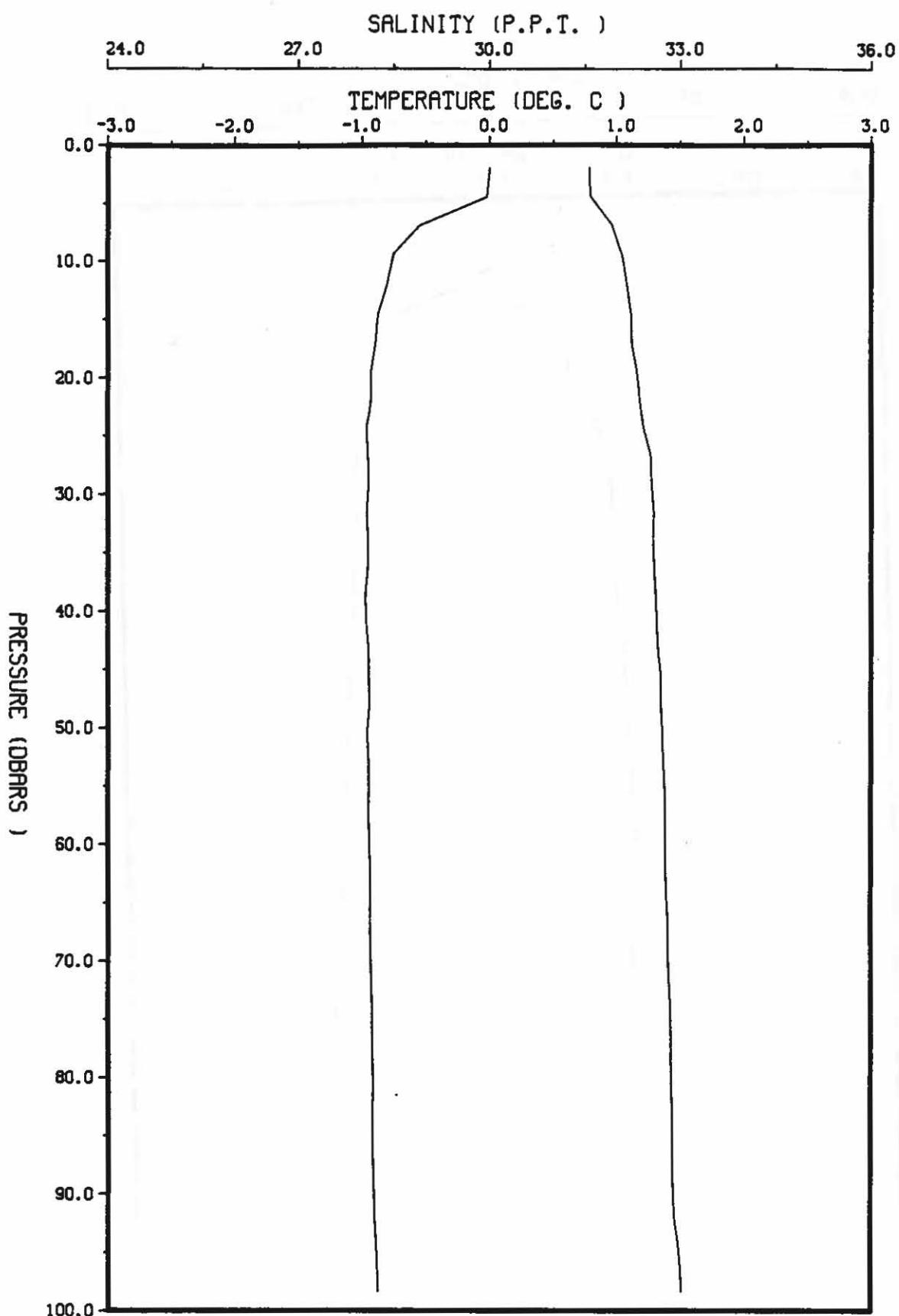


LAT. 76 21.0N, STN 1, CRUISE 84015

LONG. 89 18.0W, STARTING 14:25GMT, DAY 230, 1984

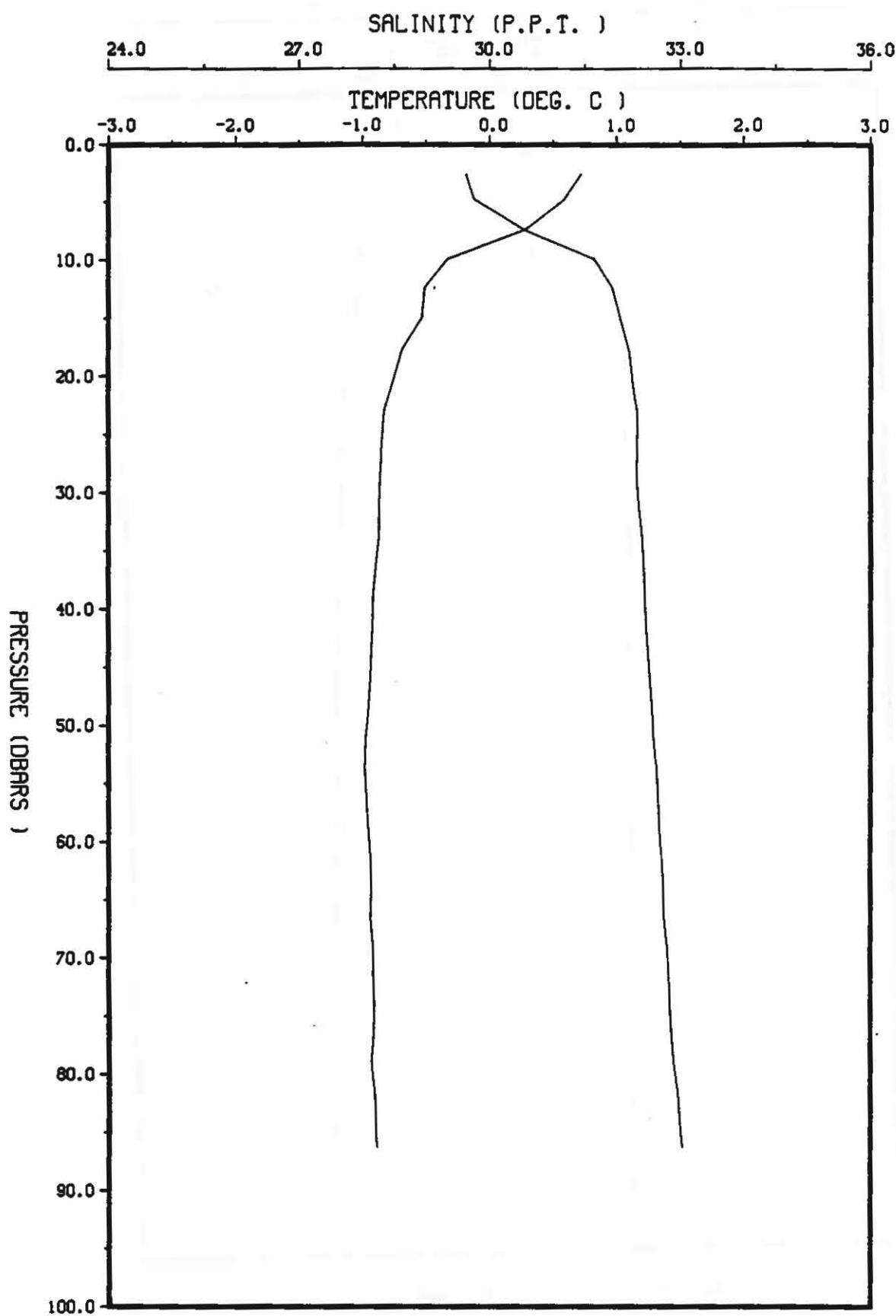


LAT. 75 52.8N, STN 2, CRUISE 84015  
LONG. 83 55.2W, STARTING 10: 46GMT, DAY 231, 1984



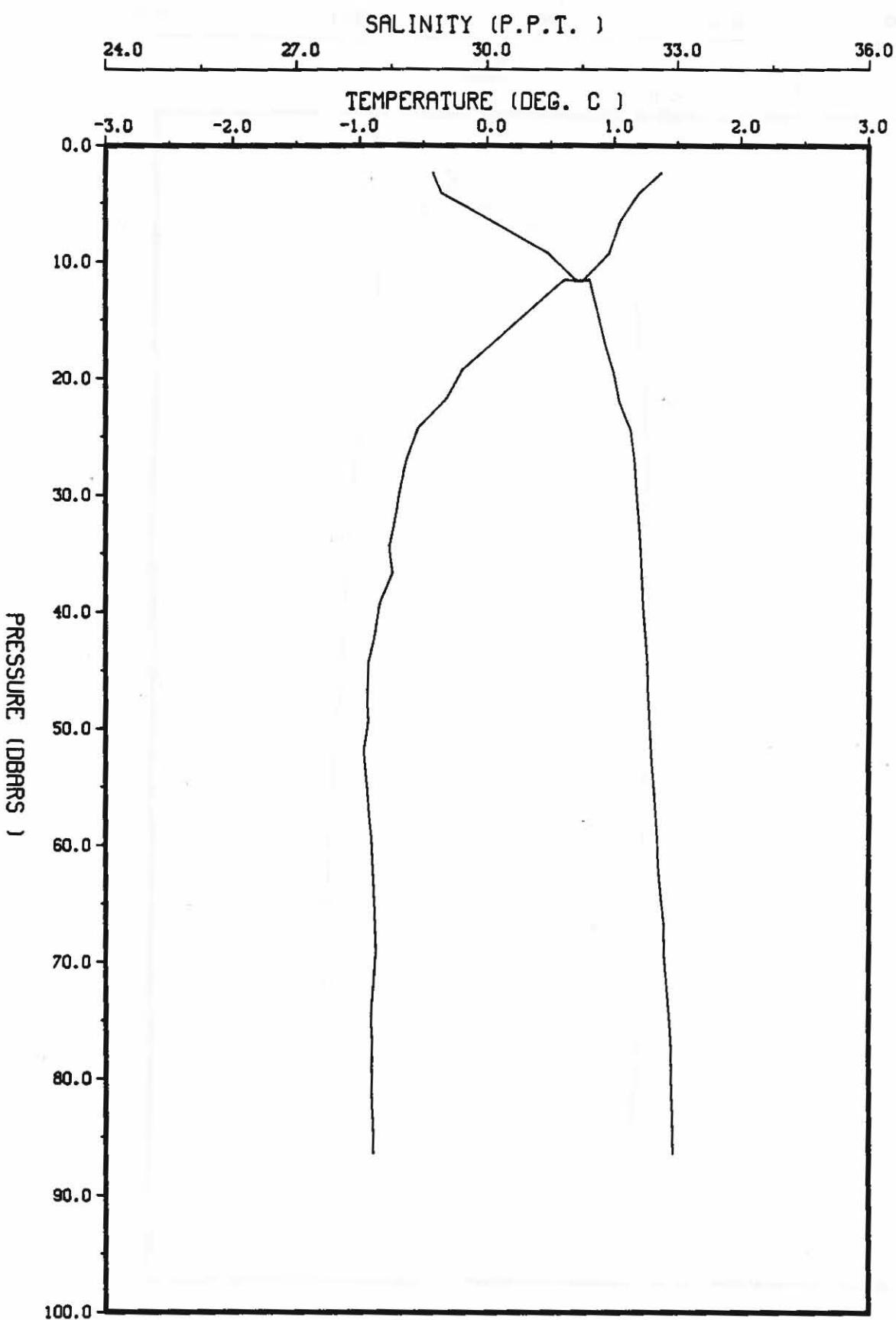
LAT. 75 49.8N, STN 3, CRUISE 84015

LONG. 87 19.8W, STARTING 8:15GMT, DAY 232, 1984



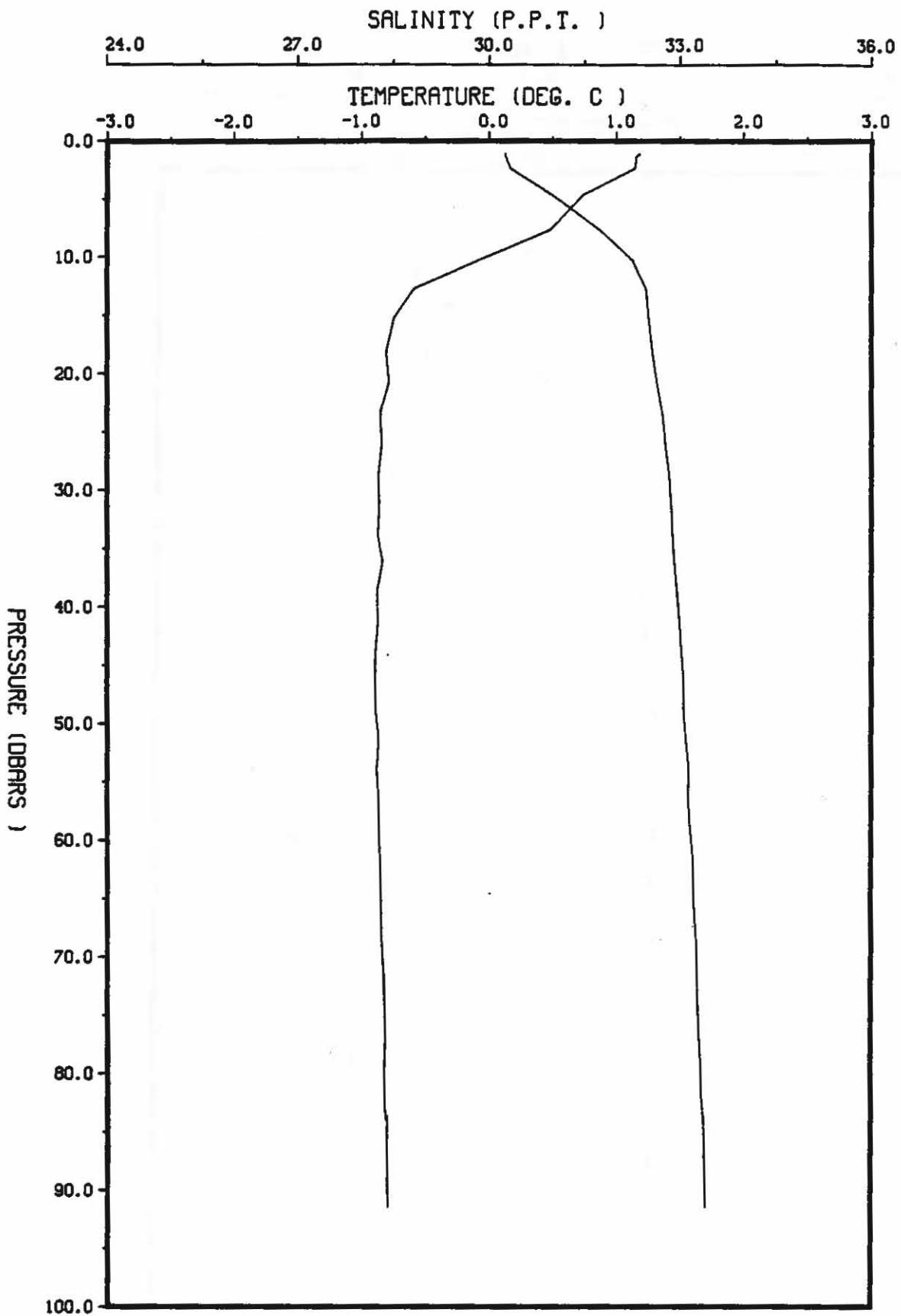
LAT. 76 4.2N, STN 4, CRUISE 84015

LONG. 83 58.8W, STARTING 8:40GMT, DAY 233, 1984



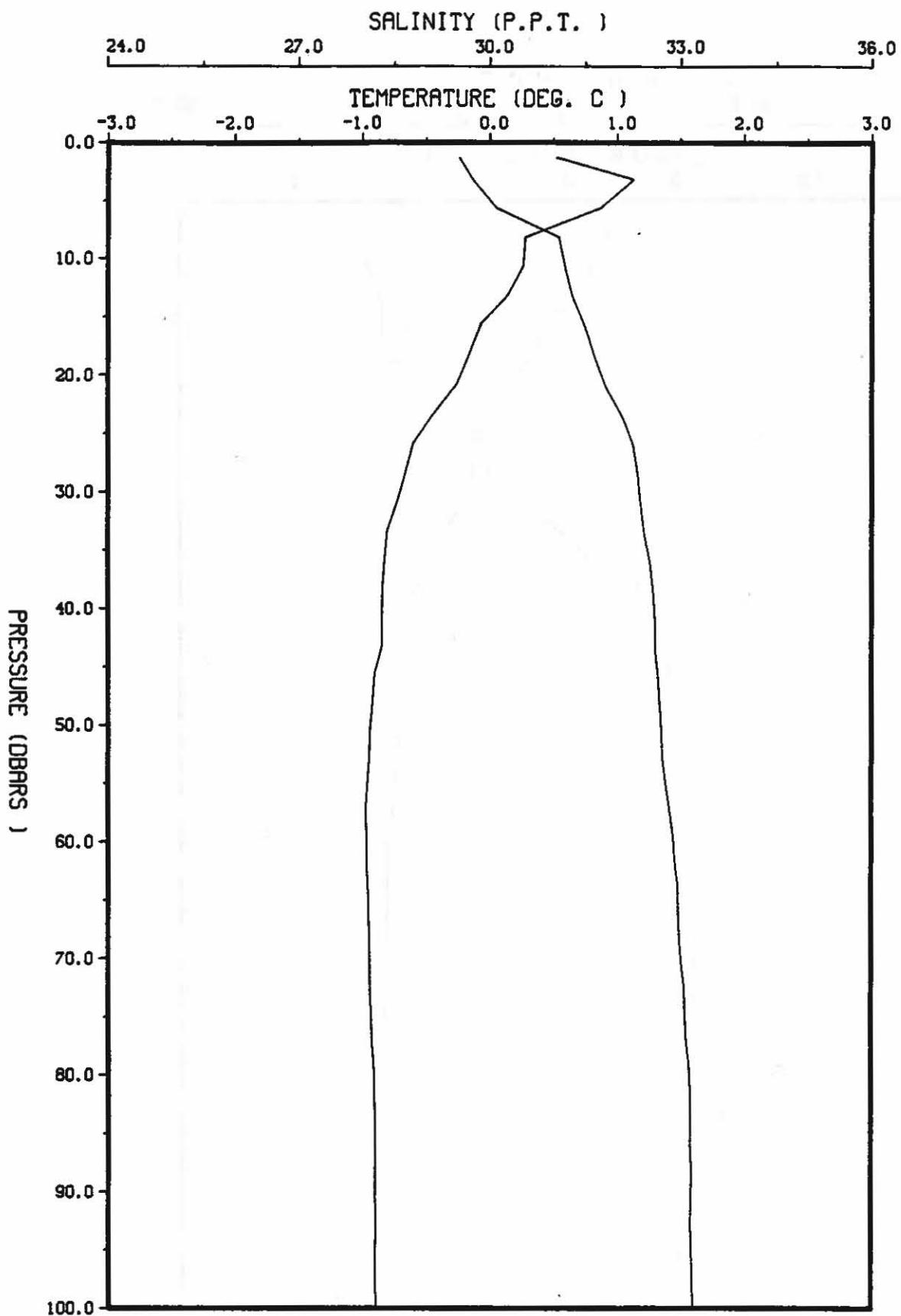
LAT. 76 9.0N, STN 5, CRUISE 84015

LONG. 84 3.0W, STARTING 9:30GMT, DAY 234, 1984



LAT. 75 54.6N, STN 6, CRUISE 84015

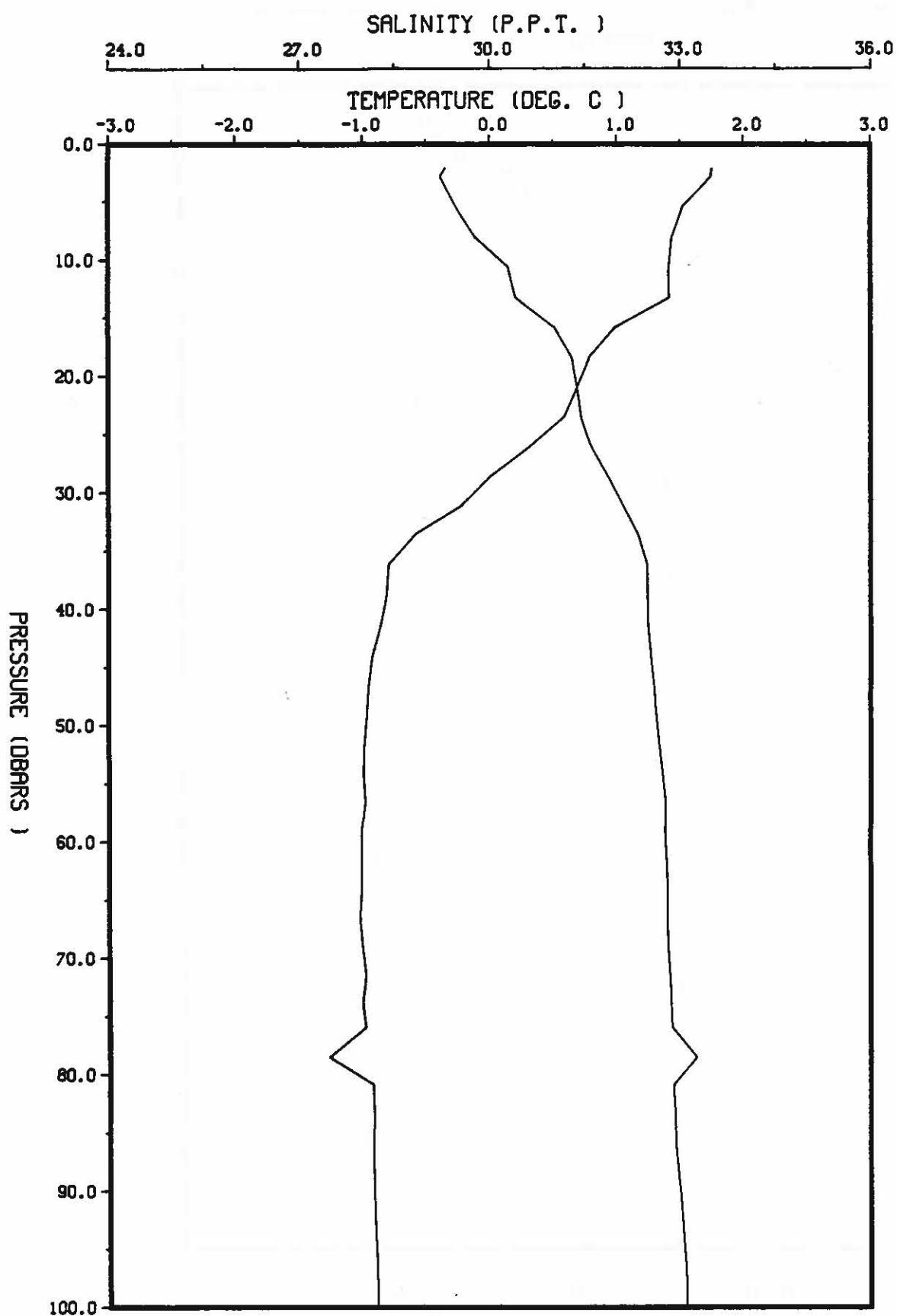
LONG. 86 31.2W, STARTING 20:53GMT, DAY 234, 1984



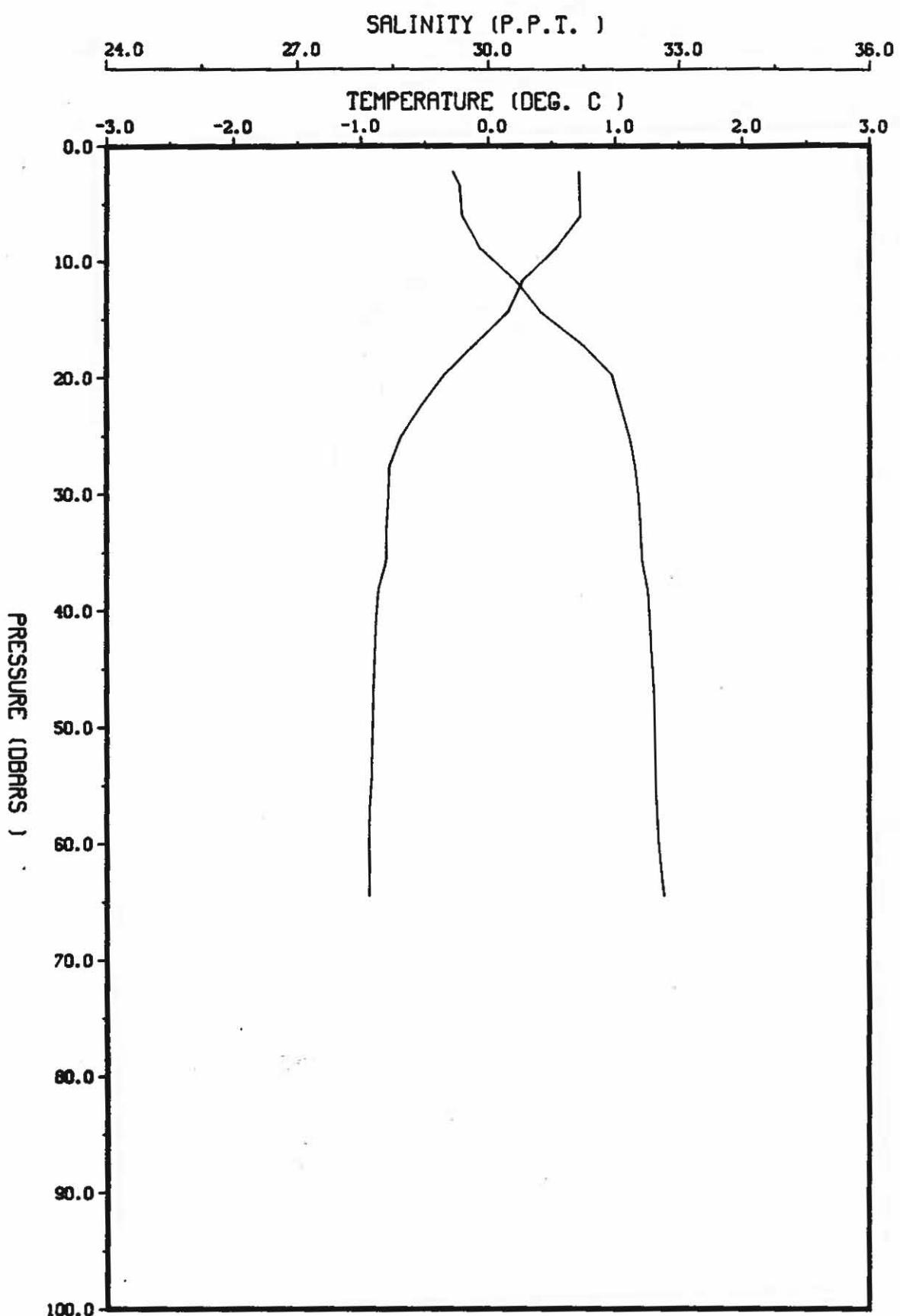
LAT. 76 18.0N, STN 7, CRUISE 84015

LONG. 88 34.2W, STARTING 9: 1GMT, DAY 235, 1984

LDO

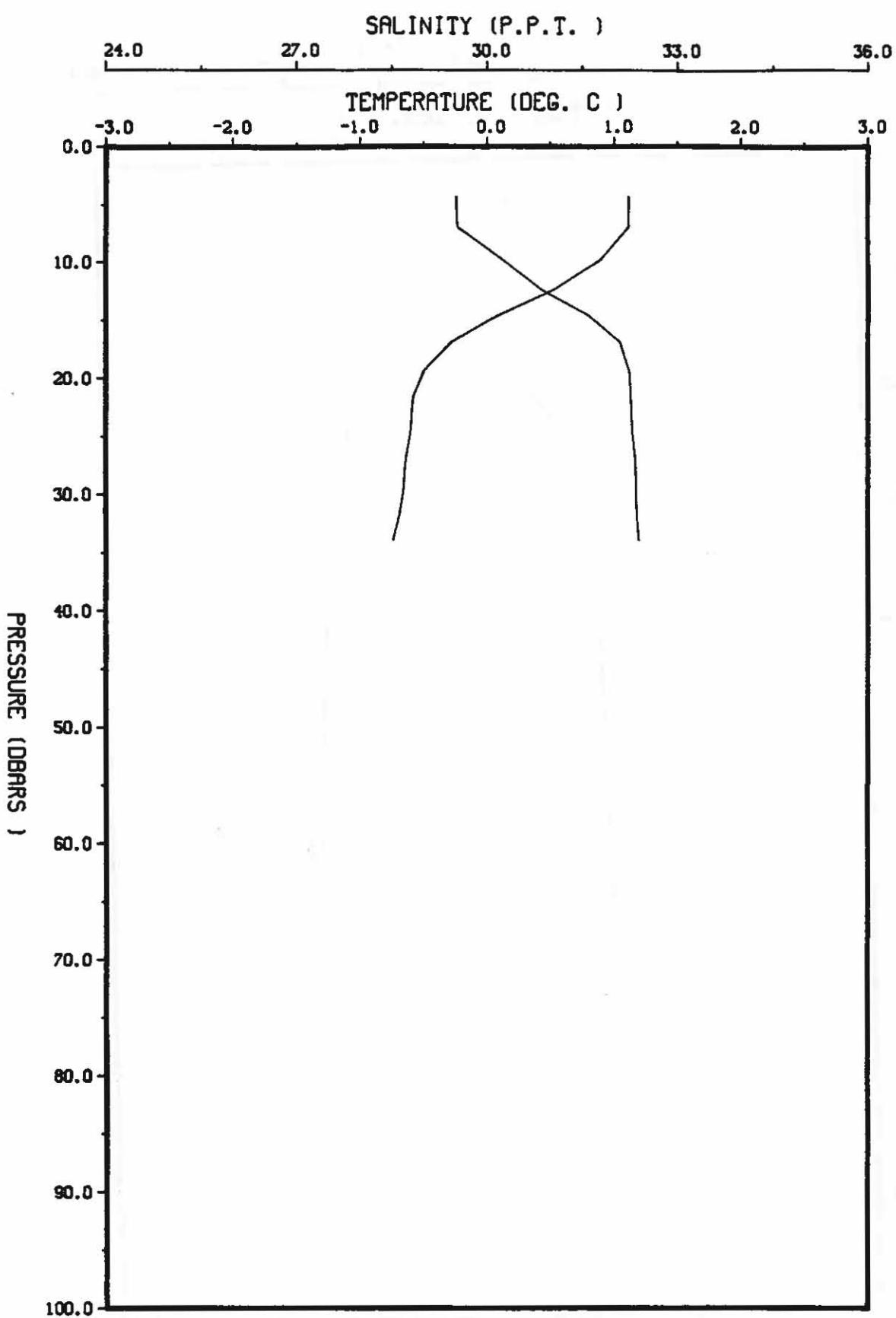


LAT. 76 22.8N, STN 8, CRUISE 84015  
LONG. 83 6.6W, STARTING 13: 16GMT, DAY 236, 1984



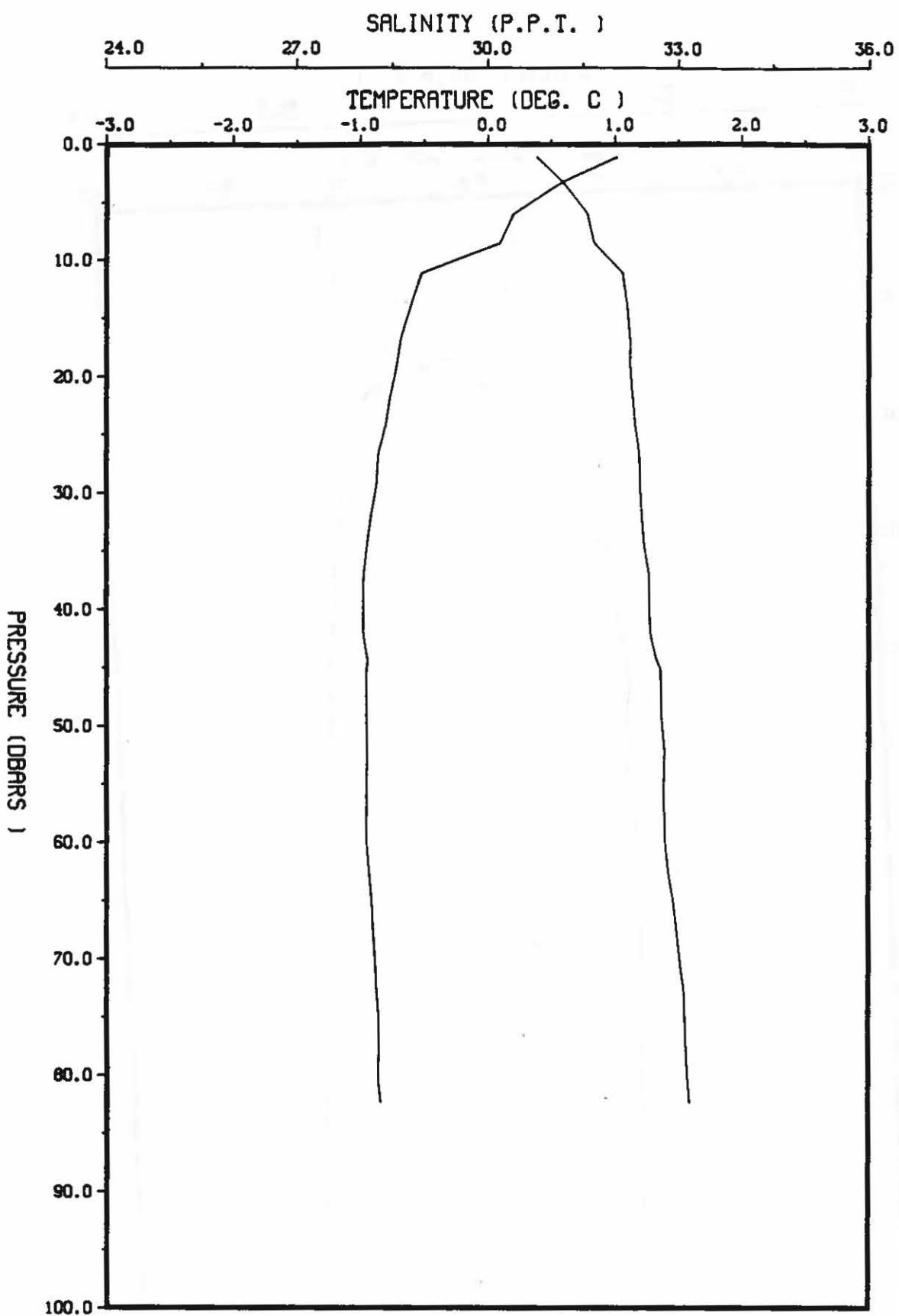
LAT. 76 17.4N, STN 9, CRUISE 84015

LONG. 88 33.0W, STARTING 8:00GMT, DAY 237, 1984

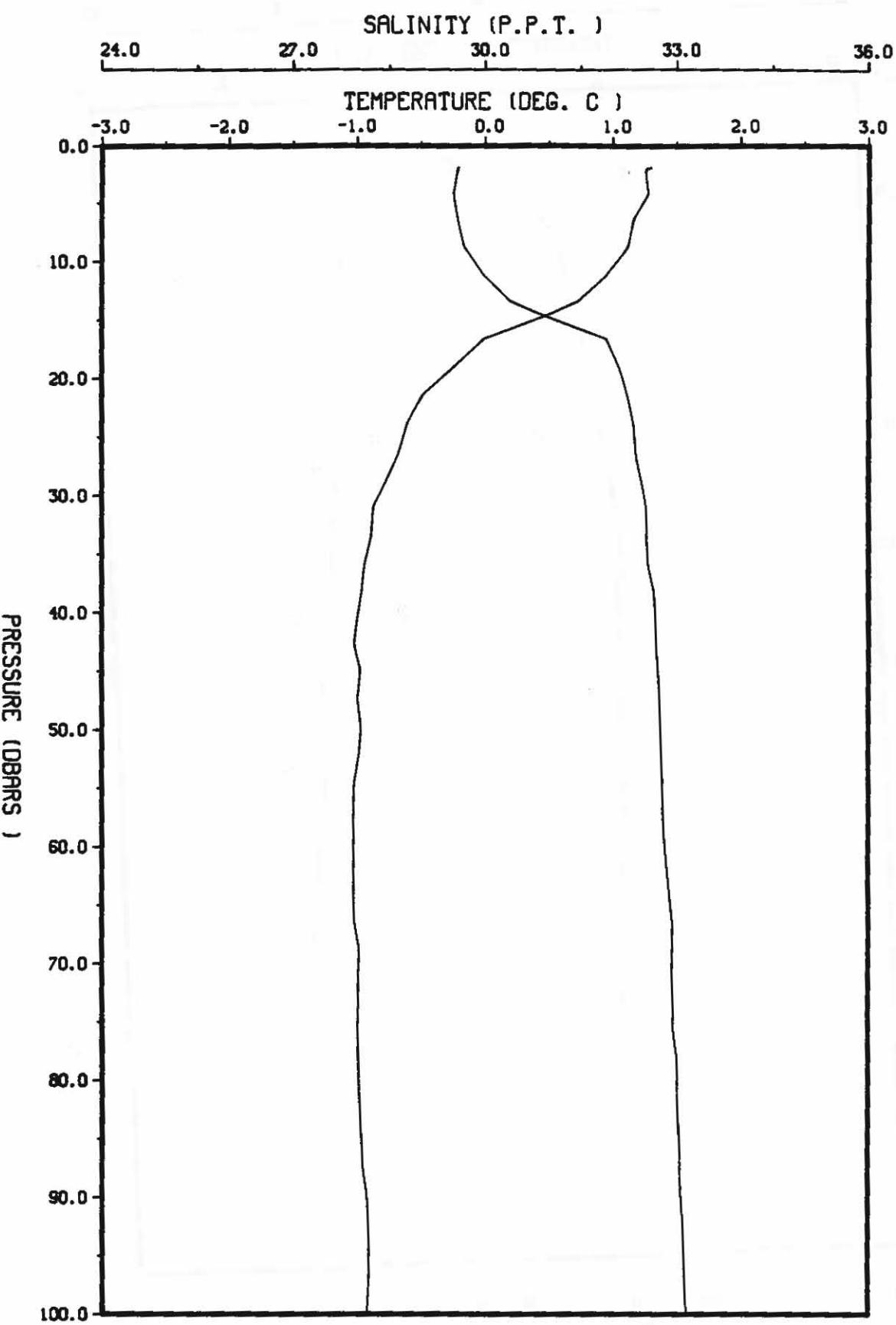


LAT. 76 12.0N, STN 10, CRUISE 84015

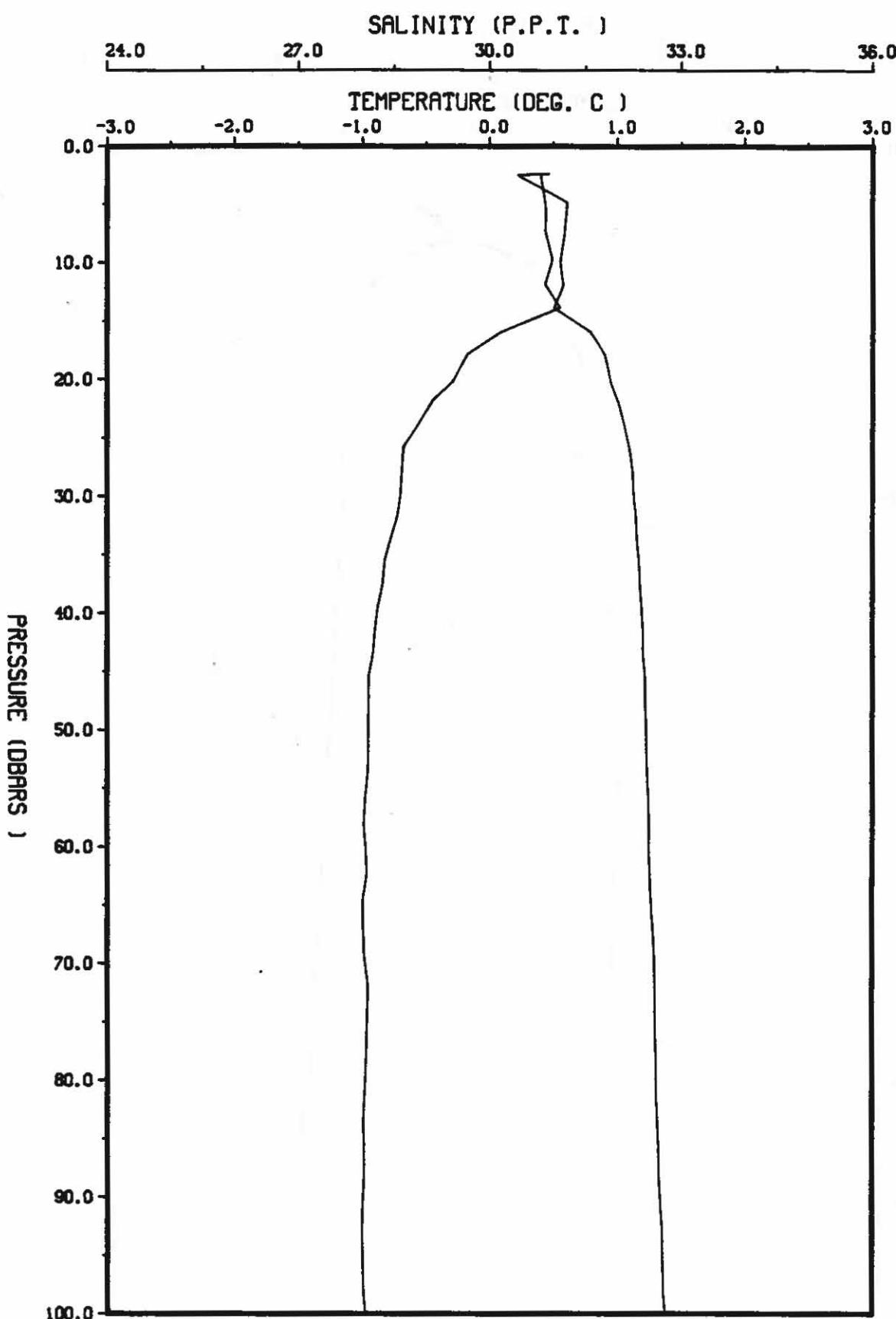
LONG. 87 20.4W, STARTING 1:36GMT, DAY 238, 1984



LAT. 76 9.6N, STN 11, CRUISE 84015  
LONG. 86 13.2W, STARTING 20:35GMT, DAY 238, 1984

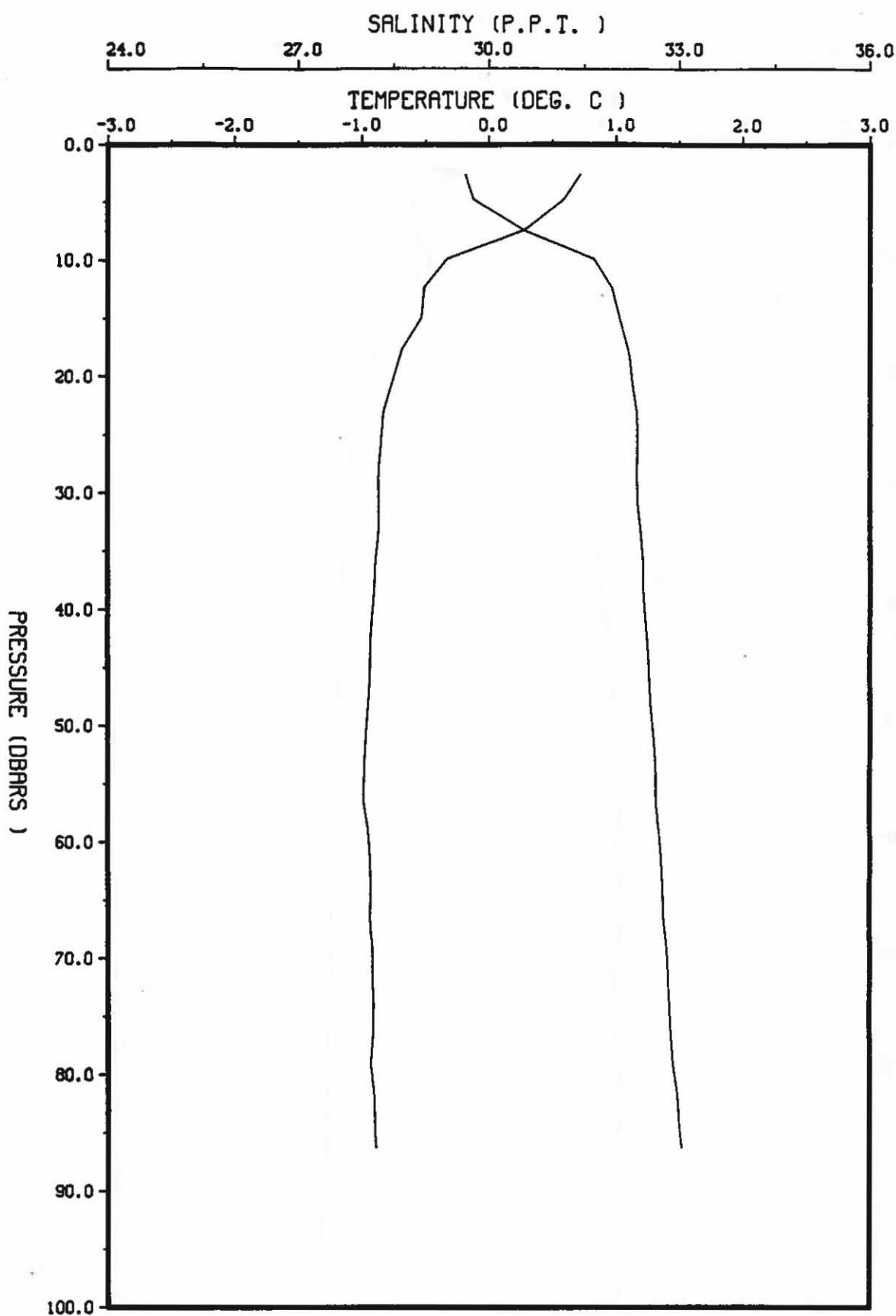


LAT. 76 12.6N, STN 12, CRUISE 84015  
LONG. 83 53.4W, STARTING 14:24GMT, DAY 239, 1984



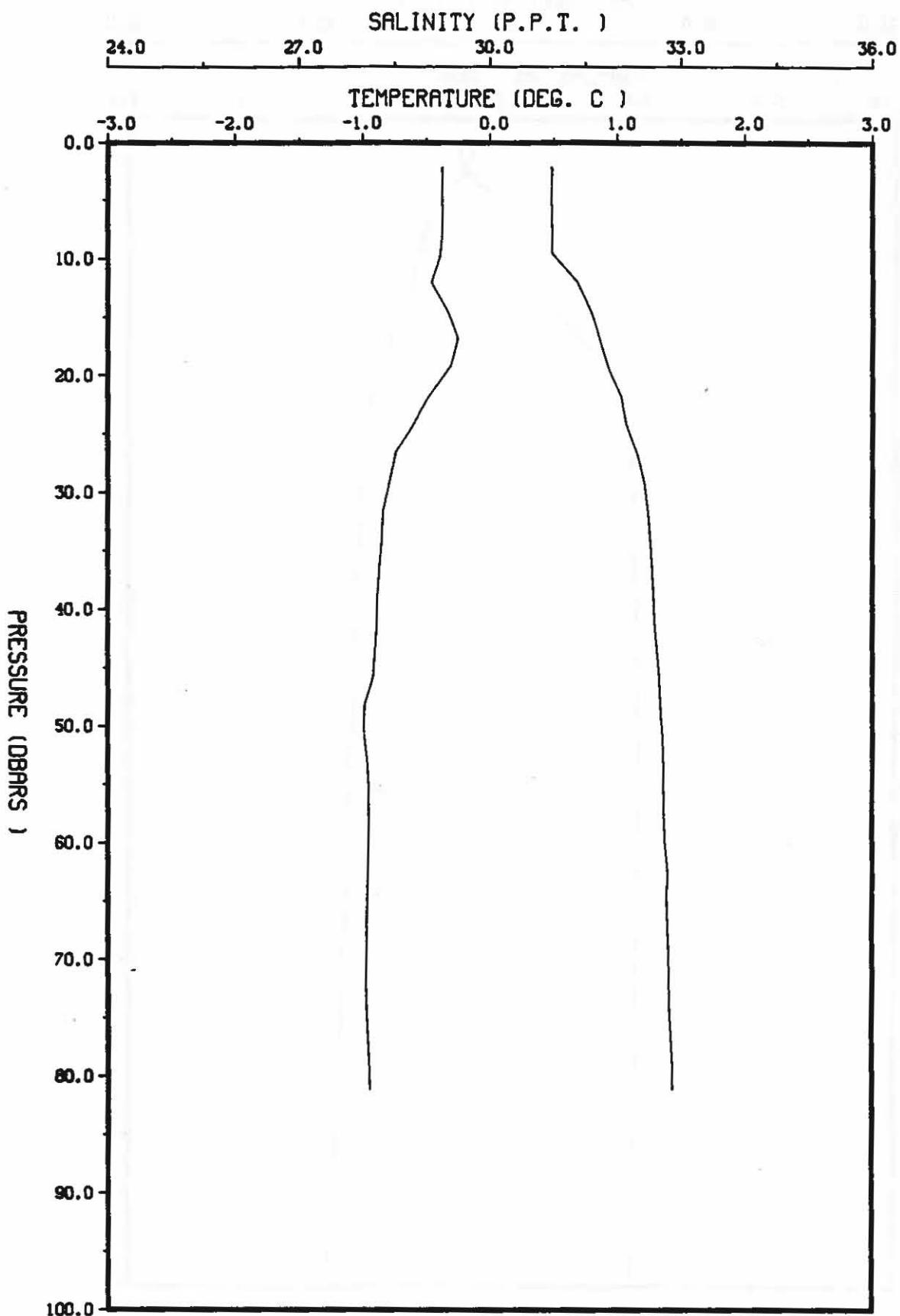
LAT. 75 56.4N, STN 13, CRUISE 84015

LONG. 83 59.4W, STARTING 21:53GMT, DAY 238, 1984

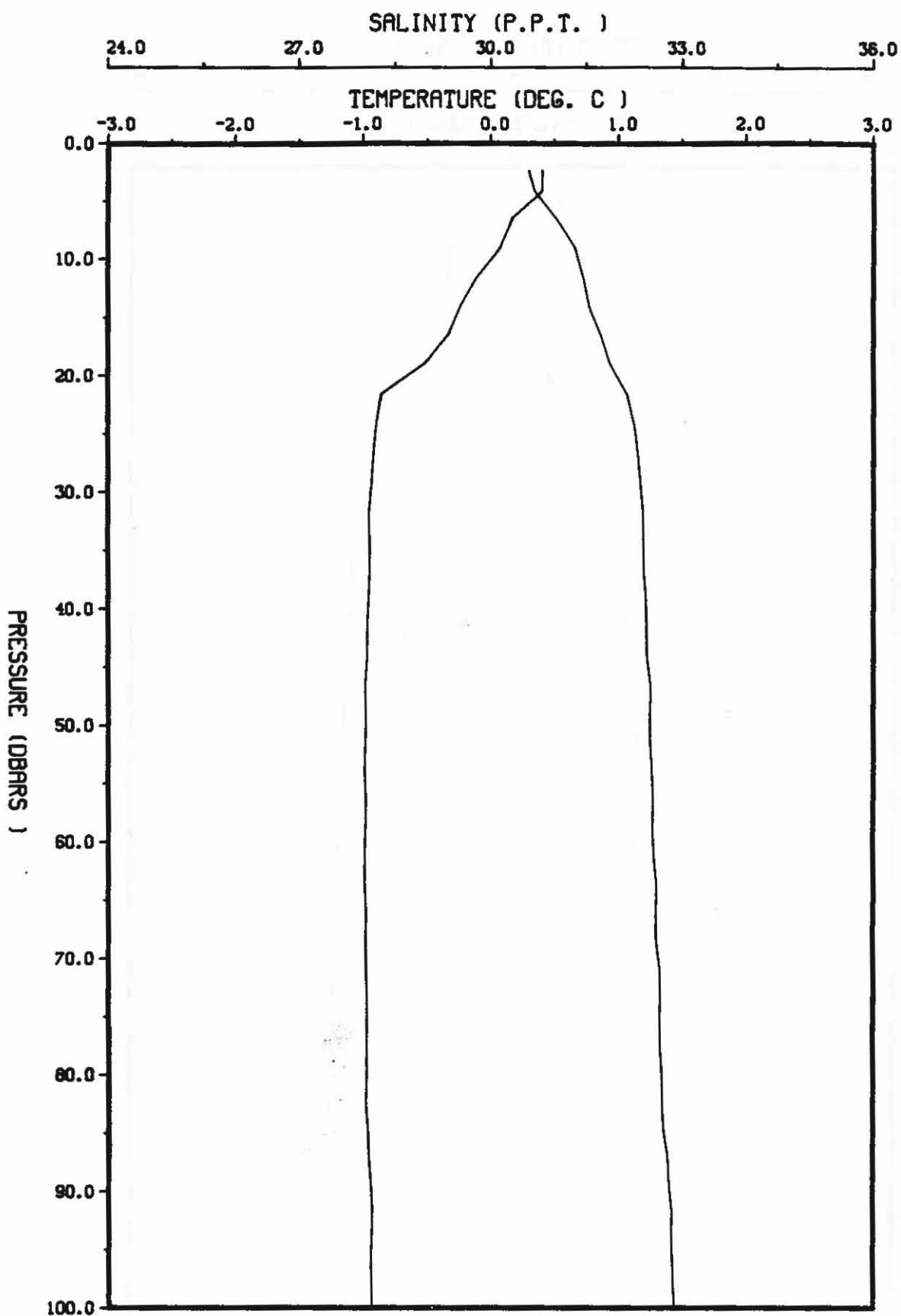


LAT. 76 9.0N, STN 5, CRUISE 84015

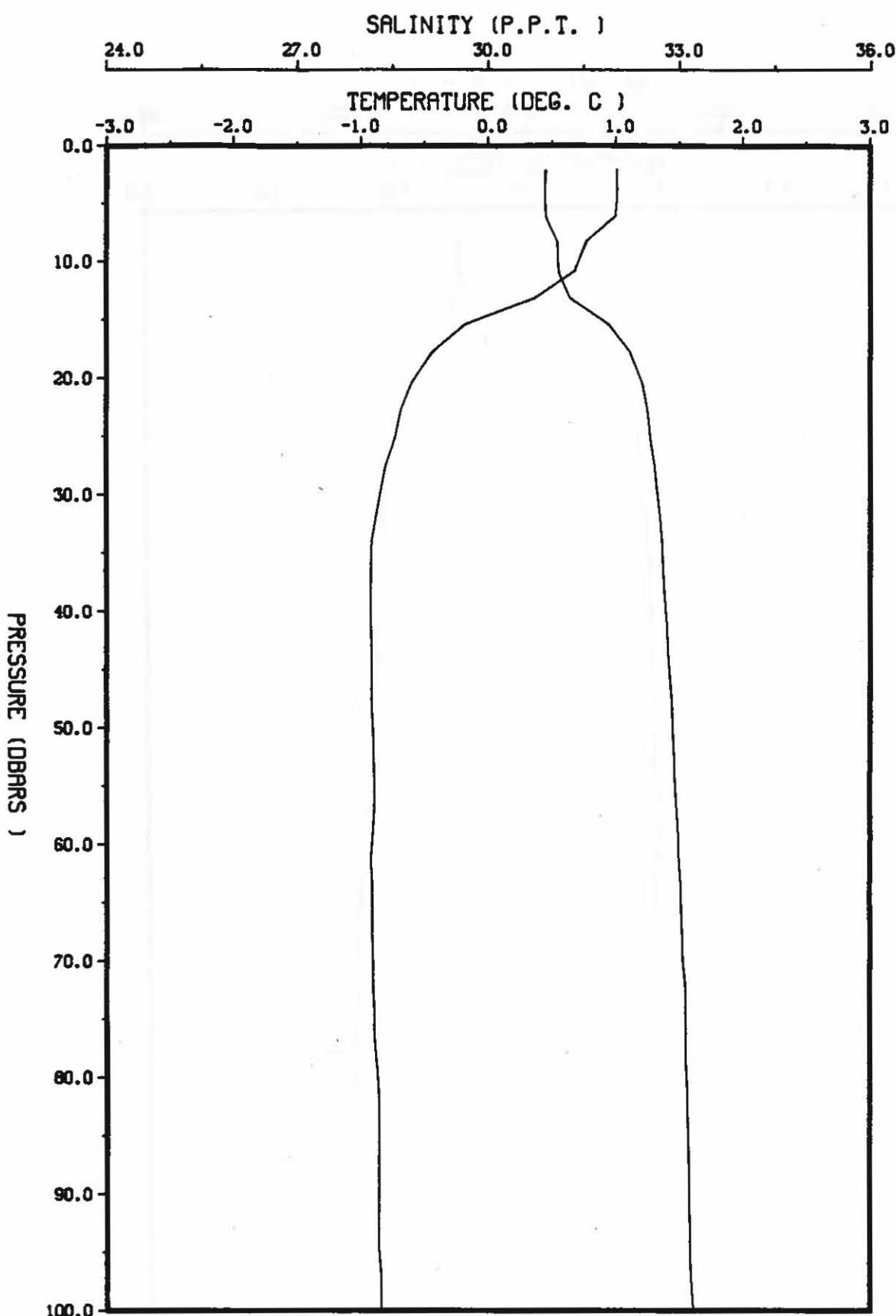
LONG. 84 3.0W, STARTING 9:40GMT, DAY 234, 1984



LAT. 75 48.6N, STN 14, CRUISE 84015  
LONG. 85 13.8W, STARTING 8:40GMT, DAY 240, 1984



LAT. 75 44.4N, STN 15, CRUISE 84015  
LONG. 85 42.0W, STARTING 21:43GMT, DAY 240, 1984



LAT. 75 48.0N, STN 16, CRUISE 84015

LONG. 86 2.4W, STARTING 8:31GMT, DAY 241, 1984

