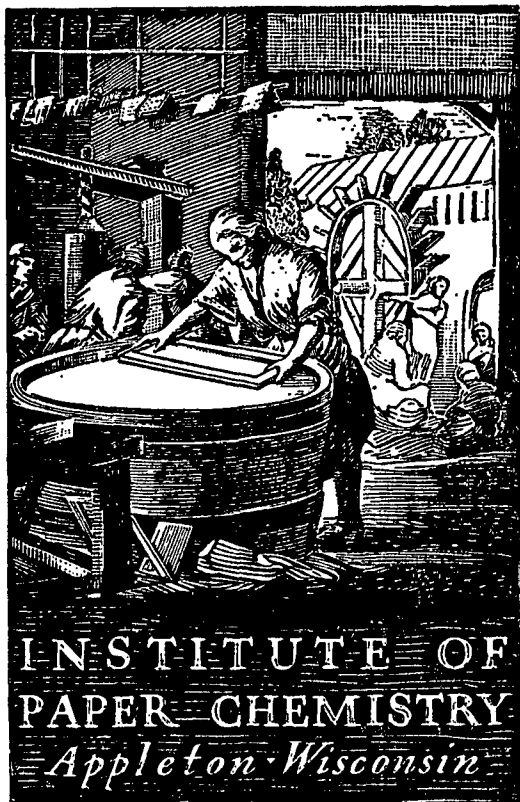




**CONTINUOUS EVALUATION OF
CORRUGATING MEDIUM**

SUMMARY REPORT

Project 1108-17

Progress Report 42

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

April 1, 1959

CODE LETTERS FOR CONTINUOUS EVALUATION OF CORRUGATING MEDIUM
SUMMARY REPORT, PROGRESS REPORT 42, APRIL 1, 1959

Company - Mill	Machine No.	Code Letter
The Chesapeake Corporation of Virginia - West Point	1	N
Continental Can Company, Inc. - Hopewell	1	E
Gaylord Container Corporation - Bogalusa	4	Q
International Paper Company - Bastrop	1	C
- Bastrop	2	--
- Georgetown	1	P
- Georgetown	2	--
The Mead Corporation - Sylva	1	S
- Lynchburg	2	A
- Harriman	1	K
Muskingum Fibre Products Company - Coshocton	1	J
North Carolina Pulp Company - Plymouth	3	R
Olin Mathieson Chemical Corporation - Monroe	1	--
- Monroe	2	H
Owens-Illinois Glass Company - Tomahawk	1	B
- Tomahawk	2	L
- Tomahawk	3	D
- Big Island	1	G
- Big Island	2	M
St. Joe Paper Company - Port St. Joe	1	F
Union Bag-Camp Paper Corporation - Savannah	2	O
West Virginia Pulp and Paper Company - Covington	6	I
- Covington	7	--
Hinde and Dauch of Canada - Trenton	1	T
- Charleston	--	U

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

Continuous Evaluation

of

Corrugating Medium

SUMMARY REPORT

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to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

April 1, 1959

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THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

INTRODUCTION

This report presents a summary of the results obtained in conjunction with the Continuous Evaluation of Corrugating Medium from April 1, 1958, to March 31, 1959, and is supplementary to a similar report dated October 1, 1958. The present report covers a period of twelve months. Each month has been designated a period number which is related to the progress report numbers as shown in Table I.

This study was three and one-half years' old on April 1, 1959. Data have been obtained for a period of 42 months, but because the results for the months of February, March and April (1957) were summarized in one progress report (corrugator was being repaired), only 40 periods are shown in Table II and Figure 1 in which the current F.K.I. averages are tabulated and plotted. In observance of the completion of three and one-half years, it would seem appropriate to review the results obtained to date. The following observations may be made about these results:

(1) Basis weight was 26.6 lb. for the first period; this was the lowest value noted to date. Highest basis weight observed during the entire 40 periods was 27.4 lb. Basis weight is currently maintaining a level of 27.3 lb. No long-term trends have been evident.

(2) Caliper exhibited its highest averages during the third and fourth periods when it was 10.7 points. Currently, caliper is 10.1 points. No long-range trend appears to be evident.

TABLE I

RELATIONSHIP OF PROGRESS REPORT NUMBERS TO PERIOD NUMBERS

Period	Progress Report Number	Date of Report	Month Reported
29	31	July 1, 1958	April, 1958
30	31	July 1, 1958	May, 1958
31	31	July 1, 1958	June, 1958
32	32	Aug. 1, 1958	July, 1958
33	33	Sept. 1, 1958	August, 1958
34	34	Oct. 1, 1958	September, 1958
35	35	Nov. 1, 1958	October, 1958
36	37	Dec. 1, 1958	November, 1958
37	38	Jan. 1, 1959	December, 1958
38	39	Feb. 1, 1959	January, 1959
39	40	Mar. 1, 1959	February, 1959
40	41	Apr. 1, 1959	March, 1959

TABLE II

TABULATION OF CURRENT F.K.I. AVERAGES FOR PERIODS 1 THROUGH 40

Period	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
1 Oct., 1955	26.6	10.4	33.2	33.0
2 Nov., 1955	26.8	10.4	31.3	32.4
3 Dec., 1955	27.1	10.7	31.1	31.7
4 Jan., 1956	27.3	10.7	32.8	33.1
5 Feb., 1956	27.0	10.5	33.1	33.7
6 March, 1956	27.2	10.4	31.8	33.9
7 April, 1956	27.2	10.2	31.6	35.1
8 May, 1956	27.2	10.2	33.0	34.8
9 June, 1956	27.0	10.2	34.4	34.7
10 July, 1956	26.8	10.2	33.4	35.3
11 Aug., 1956	27.0	10.2	36.0	36.4
12 Sept., 1956	27.3	10.1	35.5	37.5
13 Oct., 1956	27.3	10.4	34.2	35.5
14 Nov., 1956	27.2	10.5	36.4	35.4
15 Dec., 1956	27.4	10.5	33.5	35.3
16 Jan., 1957	27.2	10.5	33.9	34.4
17 Feb., March, Apr., 57	27.3	10.3	33.8	35.9
18 May, 1957	27.3	10.2	35.8	37.1
19 June, 1957	27.4	10.3	36.4	37.7
20 July, 1957	27.2	10.4	36.0	37.9
21 Aug., 1957	27.0	10.1	35.9	37.7
22 Sept., 1957	27.3	10.4	36.9	36.7
23 Oct., 1957	27.0	10.3	36.0	35.0
24 Nov., 1957	26.9	10.2	34.9	36.4
25 Dec., 1957	27.0	10.3	34.1	35.7
26 Jan., 1958	27.1	10.3	33.9	34.8
27 Feb., 1958	26.9	10.4	33.4	35.3
28 March, 1958	26.9	10.2	34.9	36.0
29 Apr., 1958	26.9	10.4	34.7	33.4
30 May, 1958	27.1	10.4	35.3	33.1
31 June, 1958	27.1	10.3	34.6	32.6
32 July, 1958	27.2	10.1	35.8	33.6
33 Aug., 1958	27.1	10.1	36.1	33.8
34 Sept., 1958	27.2	10.3	34.7	33.1
35 Oct., 1958	27.2	10.2	37.4	33.2
36 Nov., 1958	27.2	10.3	36.5	31.9

TABLE II--Continued

TABULATION OF CURRENT F.K.I. AVERAGES FOR PERIODS 1 THROUGH 40

Period		Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
37	Dec., 1958	27.3	10.3	37.2	32.1
38	Jan., 1959	27.3	10.4	36.5	32.4
39	Feb., 1959	27.2	10.2	35.9	31.9
40	Mar., 1959	27.3	10.1	35.8	31.7

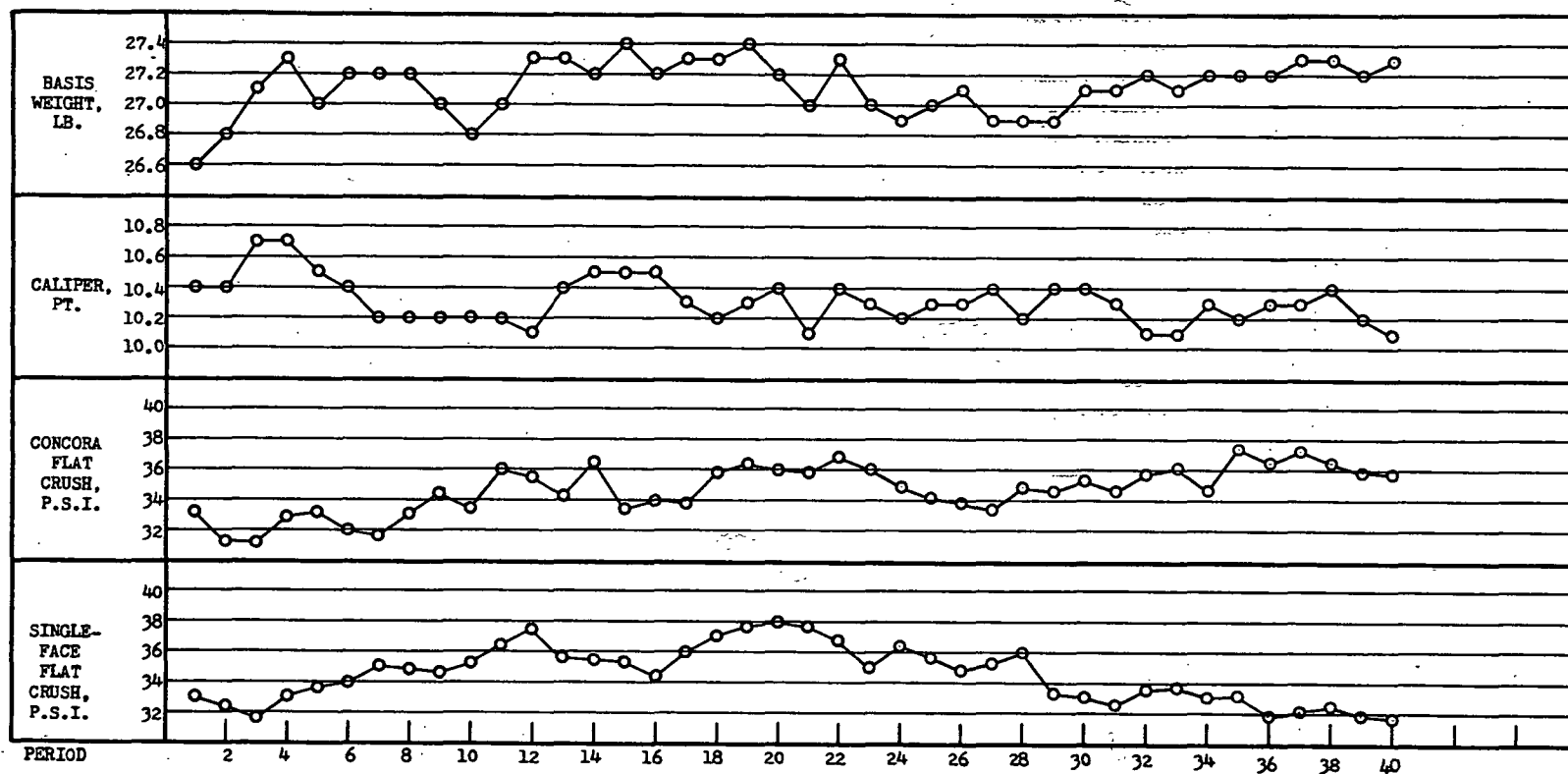


Figure 1

Comparison of Current F.K.I. Averages for Periods 1 Through 40

(3) Concora flat crush has exhibited no sustained trend but is maintaining a higher level today than at the start of the program.

(4) Single-face flat crush is difficult to interpret in view of the fact that a new Langston corrugator has been used since the 29th period. It may be seen in Figure 1 that since this time, the single-face flat crush level has been lower. This depression in values is believed to be related to the new corrugator and not to the quality of the corrugating medium.

These statements characterize the long-range trends and hence ignore some short-range trends. The latter trends often are more evident when the results for the twelve-month period are considered alone. The current F.K.I. averages for periods 29 through 40 are given in Table II and plotted in Figure 2 where the following may be noted:

(1) Basis weight has shown a slight upward trend from 26.9 lb. for the 29th period to 27.3 lb. for the 40th period.

(2) Caliper has varied from a high of 10.4 pt. to a low of 10.1 pt. with no sustained trend being evident.

(3) Concora flat crush exhibited averages which ranged from 34.6 to 37.4 p.s.i. There were indications of an upward trend.

(4) Single-face flat crush varied from a high of 33.8 p.s.i. to a low of 31.7 p.s.i. A downward trend was evident.

Shown in Table III for periods 29 through 40 is a tabulation of the number of rolls of corrugating medium submitted from each machine. It may be noted that the total number of rolls evaluated during each period varied from a minimum of 70 to a maximum of 121.

TABLE III

TABULATION BY PERIODS OF THE NUMBER OF ROLLS OF CORRUGATING MEDIUM SUBMITTED FROM EACH MACHINE

Machine Code	Periods											
	29 Apr., 1958	30 May, 1958	31 June, 1958	32 July, 1958	33 Aug., 1958	34 Sept., 1958	35 Oct., 1958	36 Nov., 1958	37 Dec., 1958	38 Jan., 1959	39 Feb., 1959	40 Mar., 1959
A	2	4	2	2	4	2	4	4	2	2	4	2
B	2	2	6	3	5	1	3	4	1	1	9	13
C	4	7	9	7	8	9	11	7	7	7	10	8
D	3	2	4	5	4	4	3	2	2	2	9	10
E	10	7	7	7	7	5	8	6	9	3	11	9
F	15	6	9	0	12	11	2	6	0	4	6	2
G	6	2	8	7	2	9	8	10	7	6	6	8
H	3	3	6	2	4	1	5	3	2	2	4	4
I	1	5	5	5	3	5	2	4	1	9	14	4
J	7	8	8	4	8	10	6	9	5	2	4	6
K	4	2	2	4	2	2	6	2	2	4	2	4
L	4	3	4	5	4	4	4	3	1	2	9	13
M	6	2	8	5	2	9	10	10	9	6	6	8
N	0	1	0	1	0	0	0	1	0	0	0	1
O	7	3	8	3	10	5	9	7	11	7	8	13
P	5	6	7	6	7	8	10	9	5	8	9	8
Q	6	1	0	0	0	0	0	0	0	0	0	
R	3	2	1	2	3	1	3	2	2	1	3	5
S	2	2	4	2	4	2	4	2	4	2	4	2
T	1	6	4	4	12	6	4	3	4	0	3	0
U ^a	--	--	--	--	--	--	--	--	2	2	0	0
Total	91	74	102	74	101	94	102	94	76	70	121	120

Note a. Participation in the program was initiated during the 37th period.

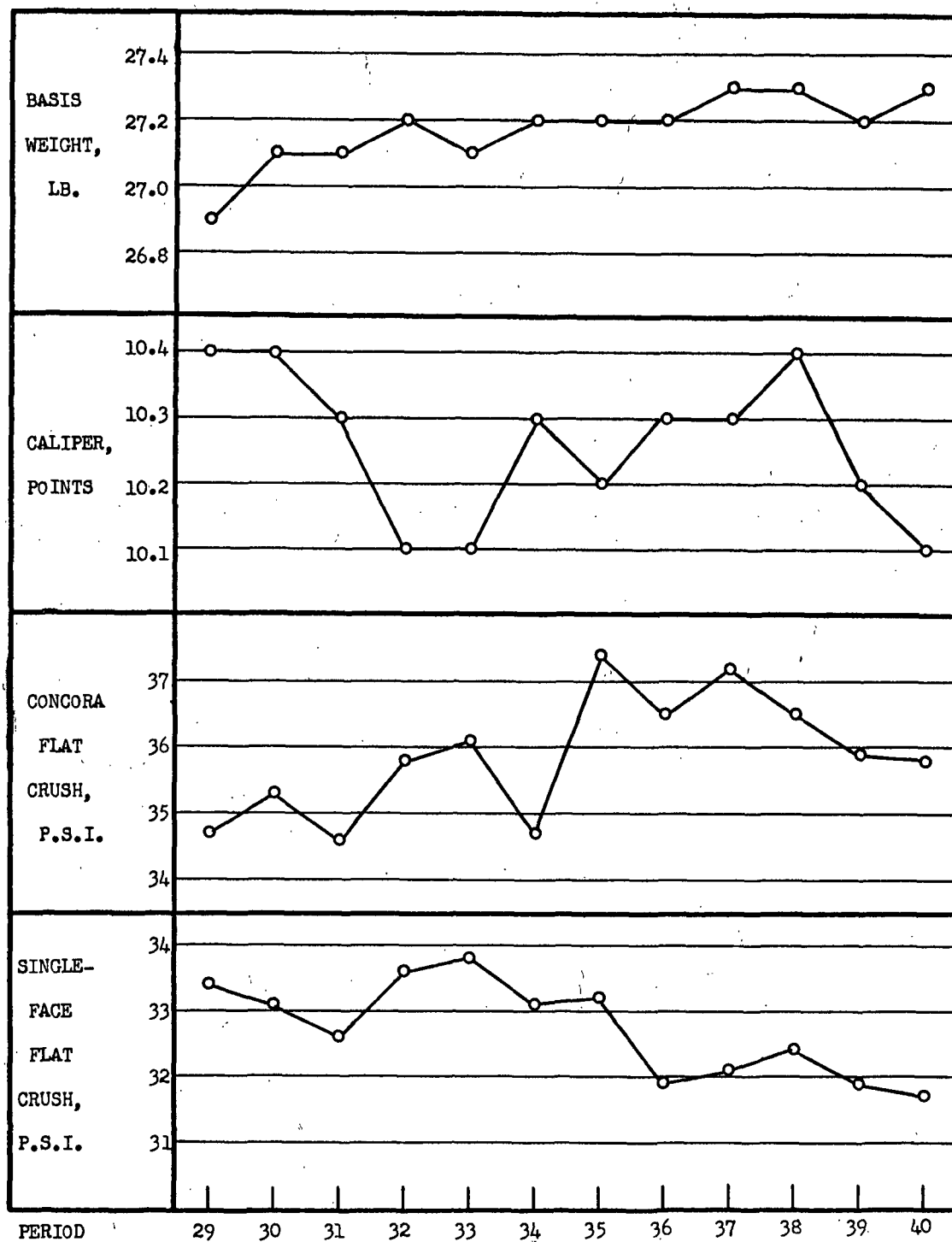


Figure 2

Comparison of Current F.K.I. Averages for Periods 29 Through 40

The results obtained for each machine during periods 29 through 40 have been compiled in tabular form and plotted. This involved the preparation of twenty-one tables and a corresponding number of graphs. Needless to say, discussion of the results for each machine in the usual formal way would probably be uninteresting as well as wasteful of space. Therefore, in order to present these results as concisely as possible, Table IV was prepared in which the following information is given for each machine:

1. Table number and page on which it is located
2. Figure number and page on which it is located
3. Brief trend summaries for each test

In Table IV, therefore, it is possible at a glance to locate the page numbers on which are shown the tabular and graphic presentations of data for any given machine and, at the same time, to review the brief trend notations for each test. For example, in the case of Machine A, it may be noted in Table IV that the test results are given in Table V on page 14 and presented graphically in Figure 3 on page 25. In addition, the succinct trend notations reveal that basis weight has varied from 26.8 to 28.4 lb., that caliper has varied from 9.1 to 10.7 pt., that Concora flat crush has been uniform varying only from 32.5 to 37.5 p.s.i., and that single-face flat crush has been rather variable as reflected by a range of 28.6 to 35.1 p.s.i. Information like that just described for Machine A is available quickly and conveniently in Table IV for all twenty-one machines. Therefore, no further discussion of the results for individual machines will be given in this text. The reader is referred instead to Table IV.

TABLE IV
 LOCATION OF DATA AND SUMMARY OF TRENDS FOR INDIVIDUAL MACHINES

	Machines	A	B	C	D	E	F
Tabular Data:	Table	V	VI	VII	VIII	IX	X
	Page	14	14	15	15	16	16
Graphical Presentation:							
	Figure	3	4	5	6	7	8
	Page	25	26	27	28	29	30
Summarized Trends for							
Periods 29 through 40:							
Basis weight:	Variable (26.8 to 28.4 lb.)	Downward trend (27.2 to 26.1 lb.)	Uniform (26.2 to 27.1 lb.)	Variable (26.1 to 27.5 lb.)	Uniform (26.5 to 27.1 lb.)	Variable (26.8 to 28.3 lb.)	
Caliper:	Variable (9.1 to 10.7 pt.)	Downward trend (11.0 to 9.7 pt.)	Variable (10.5 to 11.2 pt.)	Downward trend (11.0 to 9.5 pt.)	Downward trend (10.8 to 9.8 pt.)	Variable (8.9 to 10.1 pt.)	
Concora Flat Crush:	Uniform (32.5 to 37.5 p.s.i.)	Variable (33.4 to 38.6 p.s.i.)	Uniform (37.9 to 41.7 p.s.i.)	Uniform (33.7 to 38.4 p.s.i.)	Uniform (34.1 to 37.8 p.s.i.)	Variable (30.8 to 41.2 p.s.i.)	
Single-Face Flat Crush:	Variable (28.6 to 35.1 p.s.i.)	Downward trend (35.4 to 30.5 p.s.i.)	Uniform (35.2 to 39.0 p.s.i.)	Uniform (30.7 to 35.5 p.s.i.)	Uniform (31.4 to 33.9 p.s.i.)	Variable (25.1 to 34.6 p.s.i.)	

TABLE IV--Continued

LOCATION OF DATA AND SUMMARY OF TRENDS FOR INDIVIDUAL MACHINES

	Machines	G	H	I	J	K	L
Tabular Data:	Table	XI	XII	XIII	XIV	XV	XVI
	Page	17	17	18	18	19	19
Graphical Presentation:	Figure	9	10	11	12	13	14
	Page	31	32	33	34	35	36
Summarized Trends for							
Periods 29 through 40:							
Basis weight:	Variable (25.7 to 27.3 lb.)	Variable (28.0 to 30.6 lb.)	Variable (25.8 to 27.0 lb.)	Variable (27.8 to 29.1 lb.)	Variable (26.8 to 28.4 lb.)	Uniform (25.9 to 26.9 lb.)	
Caliper:	Variable (9.4 to 10.0 pt.)	Variable (9.5 to 10.3 pt.)	Variable (10.0 to 10.9 pt.)	Variable (10.3 to 10.9 pt.)	Variable (9.6 to 11.1 pt.)	Variable (9.7 to 11.0 pt.)	
Concora Flat Crush:	Uniform (32.4 to 36.5 p.s.i.)	Variable (32.6 to 44.3 p.s.i.)	Uniform (34.2 to 38.6 p.s.i.)	Uniform (32.6 to 37.2 p.s.i.)	Variable (29.3 to 36.6 p.s.i.)	Variable (33.5 to 39.5 p.s.i.)	
Single-Face Flat Crush:	Uniform (29.9 to 33.8 p.s.i.)	Variable (30.6 to 36.3 p.s.i.)	Uniform (30.6 to 35.6 p.s.i.)	Uniform (29.5 to 33.0 p.s.i.)	Variable (25.9 to 34.0 p.s.i.)	Variable (30.2 to 36.4 p.s.i.)	

TABLE IV—Continued
 LOCATION OF DATA AND SUMMARY OF TRENDS FOR INDIVIDUAL MACHINES

	Machines	M	N	O	P	Q	R
Tabular Data:	Table	XVII	XVIII	XIX	XX	XXI	XXII
	Page	20	20	21	21	22	22
Graphical Presentation:							
	Figure	15	16	17	18	Note c.	19
	Page	37	38	39	40		41
Summarized Trends for							
Periods 29 through 40:							
Basis weight:	Variable (25.8 to 27.2 lb.)	Variable ^a (25.4 to 27.3 lb.)	Variable (26.6 to 27.7 lb.)	Upward trend (26.6 to 28.0 lb.)	—	Variable (25.9 to 27.6 lb.)	
Caliper:	Variable (9.2 to 10.2 pt.)	Variable ^a (8.8 to 9.9 pt.)	Variable (9.0 to 9.7 pt.)	Upward trend (9.9 to 10.6 pt.)	—	Variable (10.2 to 11.5 pt.)	
Concora Flat Crush:	Variable (32.3 to 37.6 p.s.i.)	Variable ^a (28.0 to 35.3 p.s.i.)	Uniform (35.4 to 39.3 p.s.i.)	Upward trend (36.9 to 42.1 p.s.i.)	—	Variable (34.0 to 41.8 p.s.i.)	
Single-Face Flat Crush:	Uniform (31.1 to 33.4 p.s.i.)	Variable ^b (25.8 to 32.1 p.s.i.)	Uniform (32.6 to 35.2 p.s.i.)	Uniform (34.4 to 36.6 p.s.i.)	—	Variable (33.0 to 38.1 p.s.i.)	

Note a: Based on data for only four periods.

Note b: Based on data for only three periods.

Note c: No graphical presentation or summary of trends is given because data were available for only two periods.

TABLE IV—Continued

LOCATION OF DATA AND SUMMARY OF TRENDS FOR INDIVIDUAL MACHINES

	Machines	S	T	U
Tabular Data:	Table	XXIII	XXIV	XXV
	Page	23	23	24
Graphical Presentation:	Figure	20	21	Note a.
	Page	42	43	
Summarized Trends for				
Periods 29 through 40:				
Basis weight:	Variable	Variable		—
	(27.3 to 28.5 lb.)	(26.4 to 27.8 lb.)		
Caliper:	Variable	Variable		—
	(10.5 to 11.7 pt.)	(10.0 to 11.0 pt.)		
Concora Flat Crush:	Variable	Upward Trend		—
	(31.1 to 37.0 p.s.i.)	(26.6 to 35.3 p.s.i.)		
Single-Face Flat Crush:	Variable	Uniform		—
	(29.1 to 34.5 p.s.i.)	(27.6 to 30.8 p.s.i.)		

Note a: No graphical presentation or summary of trends is given because data were available for only two periods.

TABLE V

TABULATION OF CURRENT AVERAGES BY PERIODS FOR MACHINE A

Period	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
29 April, 1958	27.1	10.3	35.0	33.4
30 May, 1958	26.8	10.1	37.5	34.8
31 June, 1958	27.4	10.1	33.4	31.0
32 July, 1958	27.4	9.9	35.5	35.1
33 Aug., 1958	27.7	10.1	35.3	33.7
34 Sept., 1958	28.4	10.7	33.0	32.8
35 Oct., 1958	27.3	10.0	35.2	30.9
36 Nov., 1958	27.1	10.1	32.5	29.9
37 Dec., 1958	26.9	9.8	33.4	28.6
38 Jan., 1959	27.2	10.5	34.6	28.6
39 Feb., 1959	27.6	10.2	37.5	32.4
40 Mar., 1959	27.3	9.1	36.9	33.3

TABLE VI

TABULATION OF CURRENT AVERAGES BY PERIODS FOR MACHINE B

Period	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
29 Apr., 1958	27.0	11.0	35.6	34.4
30 May, 1958	27.1	10.5	36.7	33.5
31 June, 1958	26.7	10.2	36.2	32.9
32 July, 1958	27.2	9.8	37.0	34.7
33 Aug., 1958	26.5	10.2	38.4	35.4
34 Sept., 1958	27.0	10.2	38.0	34.0
35 Oct., 1958	26.4	10.1	37.2	33.3
36 Nov., 1958	26.8	10.5	38.3	33.6
37 Dec., 1958	26.5	10.1	38.6	33.5
38 Jan., 1959	26.3	10.3	33.4	32.0
39 Feb., 1959	26.5	10.1	34.0	30.6
40 Mar., 1959	26.1	9.7	34.2	30.5

TABLE VII

TABULATION OF CURRENT AVERAGES BY PERIODS FOR MACHINE C

Period	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
29 Apr., 1958	26.2	11.2	37.9	36.3
30 May, 1958	26.7	10.9	41.2	38.9
31 June, 1958	26.8	11.0	40.3	36.5
32 July, 1958	26.9	10.7	40.9	38.8
33 Aug., 1958	26.8	10.7	41.4	39.0
34 Sept., 1958	26.7	10.8	38.5	36.1
35 Oct., 1958	26.8	10.6	41.7	37.0
36 Nov., 1958	26.5	10.8	40.6	35.7
37 Dec., 1958	26.8	10.5	38.9	35.5
38 Jan., 1959	26.7	11.0	40.2	35.3
39 Feb., 1959	26.6	11.0	39.8	35.2
40 Mar., 1959	27.1	10.8	40.2	35.7

TABLE VIII

TABULATION OF CURRENT AVERAGES BY PERIODS FOR MACHINE D

Period	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
29 Apr., 1958	26.7	10.6	35.3	34.0
30 May, 1958	26.4	11.0	33.7	32.3
31 June, 1958	26.2	10.4	35.1	32.5
32 July, 1958	26.6	10.3	33.8	33.1
33 Aug., 1958	26.6	10.6	38.0	35.5
34 Sept., 1958	26.4	10.8	33.7	33.3
35 Oct., 1958	26.4	10.4	38.4	34.0
36 Nov., 1958	27.5	10.4	37.8	33.4
37 Dec., 1958	26.1	9.8	37.0	31.8
38 Jan., 1959	26.3	10.2	34.7	32.3
39 Feb., 1959	26.8	9.7	34.0	30.7
40 Mar., 1959	26.8	9.5	35.2	31.9

TABLE IX

TABULATION OF CURRENT AVERAGES BY PERIODS FOR MACHINE E

Period	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
29 Apr., 1958	26.7	10.3	34.4	32.8
30 May, 1958	26.7	10.4	35.7	33.9
31 June, 1958	27.0	10.6	34.1	33.6
32 July, 1958	26.6	10.0	36.1	33.1
33 Aug., 1958	27.0	10.6	35.6	33.7
34 Sept., 1958	26.5	10.7	34.8	31.4
35 Oct., 1958	26.7	10.8	37.4	32.8
36 Nov., 1958	27.1	10.3	36.9	31.9
37 Dec., 1958	27.1	10.2	37.8	32.9
38 Jan., 1959	26.8	9.8	37.7	33.4
39 Feb., 1959	26.9	9.9	35.6	32.8
40 Mar., 1959	26.6	9.8	34.5	31.4

TABLE X

TABULATION OF CURRENT AVERAGES BY PERIODS FOR MACHINE F

Period	Basis Weight, lb.	Caliper, Points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
29 Apr., 1958	26.8	9.3	32.8	32.0
30 May, 1958	27.7	9.3	32.9	31.0
31 June, 1958	26.9	8.9	30.8	30.2
32 July, 1958	No rolls submitted during this period.			
33 Aug., 1958	27.7	9.3	33.2	30.9
34 Sept., 1958	27.5	9.2	33.0	32.5
35 Oct., 1958	28.3	9.5	41.2	34.6
36 Nov., 1958	27.5	9.3	37.6	29.3
37 Dec., 1958	No rolls submitted during this period.			
38 Jan., 1959	28.3	9.8	36.0	30.7
39 Feb., 1959	27.4	9.2	36.8	31.0
40 Mar., 1959	28.0	10.1	34.9	25.1

TABLE XI

TABULATION OF CURRENT AVERAGES BY PERIODS FOR MACHINE G

Period	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
29 Apr., 1958	25.7	9.5	35.3	33.2
30 May, 1958	26.9	10.0	35.6	33.8
31 June, 1958	26.0	9.5	34.1	32.8
32 July, 1958	26.7	9.7	34.5	33.2
33 Aug., 1958	26.3	9.4	32.6	32.4
34 Sept., 1958	26.4	9.8	32.4	31.7
35 Oct., 1958	26.7	9.9	35.1	31.7
36 Nov., 1958	27.2	9.6	35.5	32.2
37 Dec., 1958	26.7	10.0	35.3	30.9
38 Jan., 1959	27.3	9.7	36.5	33.2
39 Feb., 1959	27.0	9.9	34.2	31.7
40 Mar., 1959	26.9	9.9	33.1	29.9

TABLE XII

TABULATION OF CURRENT AVERAGES BY PERIODS FOR MACHINE H

Period	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
29 Apr., 1958	28.4	9.9	36.8	35.9
30 May, 1958	28.3	10.1	32.6	30.8
31 June, 1958	28.4	9.9	33.7	31.8
32 July, 1958	28.3	10.1	35.6	32.6
33 Aug., 1958	29.0	9.5	36.0	33.0
34 Sept., 1958	28.9	9.9	34.8	32.8
35 Oct., 1958	28.8	9.9	40.8	33.5
36 Nov., 1958	28.9	10.0	44.3	35.5
37 Dec., 1958	30.6	10.2	42.3	34.5
38 Jan., 1959	28.5	10.0	39.2	30.6
39 Feb., 1959	28.0	10.0	37.3	33.4
40 Mar., 1959	29.7	10.3	42.4	36.3

TABLE XIII

TABULATION OF CURRENT AVERAGES BY PERIODS FOR MACHINE I

Period	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
29 Apr., 1958	25.8	10.7	36.0	35.6
30 May, 1958	26.1	10.3	34.2	32.0
31 June, 1958	26.2	10.0	36.7	33.5
32 July, 1958	26.3	10.2	36.8	34.6
33 Aug., 1958	26.1	10.1	36.4	33.6
34 Sept., 1958	26.8	10.4	37.5	34.5
35 Oct., 1958	26.1	10.3	38.6	33.4
36 Nov., 1958	26.3	10.9	35.4	31.9
37 Dec., 1958	26.6	10.5	36.7	32.4
38 Jan., 1959	26.2	10.7	35.1	30.6
39 Feb., 1959	26.8	10.7	36.6	32.5
40 Mar., 1959	27.0	10.9	36.3	31.8

TABLE XIV

TABULATION OF CURRENT AVERAGES BY PERIODS FOR MACHINE J

Period	Basis Weight, lb.	Caliper, points	Concora Flat Crush p.s.i.	Single-Face Flat Crush, p.s.i.
29 Apr., 1958	27.8	10.3	33.3	31.6
30 May, 1958	28.0	10.5	34.4	32.3
31 June, 1958	28.9	10.9	33.8	32.1
32 July, 1958	28.5	10.5	35.2	33.0
33 Aug., 1958	28.3	10.4	34.9	32.4
34 Sept., 1958	28.3	10.4	32.6	32.1
35 Oct., 1958	28.5	10.3	37.2	31.8
36 Nov., 1958	28.4	10.6	35.0	30.7
37 Dec., 1958	28.5	10.6	35.8	29.5
38 Jan., 1959	27.8	10.6	35.9	31.9
39 Feb., 1959	28.5	10.7	36.5	31.7
40 Mar., 1959	29.1	10.9	36.5	30.3

TABLE XV

TABULATION OF CURRENT AVERAGES BY PERIODS FOR MACHINE K

Period	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
29 Apr., 1958	27.5	10.4	33.4	30.2
30 May, 1958	28.1	10.6	33.5	34.0
31 June, 1958	28.0	11.0	30.7	31.2
32 July, 1958	28.4	10.4	36.3	33.6
33 Aug., 1958	27.0	9.6	35.3	33.0
34 Sept., 1958	27.6	10.3	36.6	33.1
35 Oct., 1958	26.8	10.2	32.3	30.9
36 Nov., 1958	27.8	11.1	29.3	25.9
37 Dec., 1958	27.9	10.0	31.7	28.4
38 Jan., 1959	28.1	11.0	34.2	29.9
39 Feb., 1959	27.3	10.6	30.1	26.1
40 Mar., 1959	27.2	10.2	30.3	27.6

TABLE XVI

TABULATION OF CURRENT AVERAGES BY PERIODS FOR MACHINE L

Period	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
29 Apr., 1958	26.6	10.9	35.0	34.2
30 May, 1958	26.5	11.0	36.8	33.6
31 June, 1958	26.4	10.6	35.4	34.0
32 July, 1958	26.9	10.1	38.6	35.9
33 Aug., 1958	26.7	10.0	36.2	36.4
34 Sept., 1958	26.8	10.4	37.4	35.7
35 Oct., 1958	26.7	10.2	37.8	35.3
36 Nov., 1958	26.7	10.2	39.5	33.6
37 Dec., 1958	26.3	10.0	36.0	33.3
38 Jan., 1959	26.8	10.9	35.0	33.8
39 Feb., 1959	26.4	10.0	34.3	31.3
40 Mar., 1959	25.9	9.7	33.5	30.2

TABLE XVII

TABULATION OF CURRENT AVERAGES BY PERIODS FOR MACHINE M

Period	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
29 Apr., 1958	26.8	10.2	35.4	33.0
30 May, 1958	26.4	9.6	32.3	31.3
31 June, 1958	26.5	9.8	33.3	31.9
32 July, 1958	26.2	9.9	34.1	31.1
33 Aug., 1958	25.8	9.2	34.2	33.4
34 Sept., 1958	25.9	9.9	32.6	31.7
35 Oct., 1958	26.8	10.0	35.4	32.8
36 Nov., 1958	26.7	9.8	35.4	32.4
37 Dec., 1958	26.6	9.9	36.3	31.4
38 Jan., 1959	26.8	9.8	37.6	32.5
39 Feb., 1959	26.9	9.9	35.4	32.6
40 Mar., 1959	27.2	10.0	35.0	32.0

TABLE XVIII

TABULATION OF CURRENT AVERAGES BY PERIODS FOR MACHINE N

Period	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
29 Apr., 1958	No rolls submitted during this period.			
30 May, 1958	27.3	9.9	34.9	30.8
31 June, 1958	No rolls submitted during this period.			
32 July, 1958	26.5	9.1	35.3	32.1
33 Aug., 1958	No rolls submitted during this period.			
34 Sept., 1958	No rolls submitted during this period.			
35 Oct., 1958	No rolls submitted during this period.			
36 Nov., 1958	25.4	9.0	28.0	25.8
37 Dec., 1958	No rolls submitted during this period.			
38 Jan., 1959	No rolls submitted during this period.			
39 Feb., 1959	No rolls submitted during this period.			
40 Mar., 1959	26.3	8.8	29.9	No data

TABLE XIX

TABULATION OF CURRENT AVERAGES BY PERIODS FOR MACHINE O

Period	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
29 Apr., 1958	27.0	9.3	35.5	33.8
30 May, 1958	27.0	9.0	39.3	35.2
31 June, 1958	27.1	9.1	35.4	33.3
32 July, 1958	26.6	9.0	38.0	33.2
33 Aug., 1958	27.7	9.3	38.5	34.1
34 Sept., 1958	26.9	9.1	35.7	33.6
35 Oct., 1958	26.8	9.4	37.4	32.6
36 Nov., 1958	27.7	9.7	38.4	34.4
37 Dec., 1958	27.2	9.6	39.1	33.2
38 Jan., 1959	27.4	9.6	38.6	33.7
39 Feb., 1949	27.2	9.5	37.4	33.0
40 Mar., 1959	27.2	9.4	37.1	32.6

TABLE XX

TABULATION OF CURRENT AVERAGES BY PERIODS FOR MACHINE P

Period	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
29 Apr., 1958	26.7	10.0	36.9	35.9
30 May, 1958	26.6	10.2	37.1	34.4
31 June, 1958	27.1	10.2	37.0	34.9
32 July, 1958	27.0	10.0	38.1	35.1
33 Aug., 1958	27.5	9.9	38.7	35.5
34 Sept., 1958	27.3	10.2	36.9	34.9
35 Oct., 1958	27.4	10.3	40.4	36.1
36 Nov., 1958	28.0	10.6	42.1	36.6
37 Dec., 1958	27.7	10.5	40.5	35.6
38 Jan., 1959	27.9	10.5	41.6	36.2
39 Feb., 1959	27.9	10.5	40.5	36.2
40 Mar., 1959	27.8	10.6	40.6	36.2

TABLE XXI

TABULATION OF CURRENT AVERAGES BY PERIODS FOR MACHINE Q

Period	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
29 Apr., 1958	27.3	11.0	32.5	29.8
30 May, 1958	27.0	10.9	33.1	33.0
31 June, 1958	No rolls submitted during this period.			
32 July, 1958	No rolls submitted during this period.			
33 Aug., 1958	No rolls submitted during this period.			
34 Sept., 1958	No rolls submitted during this period.			
35 Oct., 1958	No rolls submitted during this period.			
36 Nov., 1958	No rolls submitted during this period.			
37 Dec., 1958	No rolls submitted during this period.			
38 Jan., 1959	No rolls submitted during this period.			
39 Feb., 1959	No rolls submitted during this period.			
40 Mar., 1959	No rolls submitted during this period.			

TABLE XXII

TABULATION OF CURRENT AVERAGES BY PERIODS FOR MACHINE R

Period	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
29 Apr., 1958	25.9	11.5	36.4	34.3
30 May, 1958	27.2	10.9	38.6	36.1
31 June, 1958	27.4	11.1	41.8	37.2
32 July, 1958	26.9	10.4	37.3	35.3
33 Aug., 1958	27.0	11.2	40.3	38.1
34 Sept., 1958	27.0	10.4	34.0	35.1
35 Oct., 1958	27.0	10.4	39.8	34.9
36 Nov., 1958	27.0	10.3	40.6	34.1
37 Dec., 1958	27.6	11.0	40.4	34.2
38 Jan., 1959	26.7	10.2	36.6	35.8
39 Feb., 1959	26.8	10.7	40.3	33.0
40 Mar., 1959	27.0	10.8	38.4	33.1

TABLE XXIII

TABULATION OF CURRENT AVERAGES BY PERIODS FOR MACHINE S

Period	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
29 Apr., 1958	28.4	10.5	34.7	34.5
30 May, 1958	28.5	11.1	37.0	33.6
31 June, 1958	27.3	10.9	31.1	29.4
32 July, 1958	28.0	10.8	31.4	29.1
33 Aug., 1958	27.6	11.1	33.4	29.5
34 Sept., 1958	28.4	11.6	33.5	31.6
35 Oct., 1958	28.4	10.9	33.8	31.2
36 Nov., 1958	27.4	11.7	33.8	29.4
37 Dec., 1958	27.9	11.7	34.7	30.4
38 Jan., 1959	28.0	11.4	33.6	32.3
39 Feb., 1959	27.8	11.2	33.9	30.7
40 Mar., 1959	28.1	11.4	36.3	30.9

TABLE XXIV

TABULATION OF CURRENT AVERAGES BY PERIODS FOR MACHINE T

Period	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
29 Apr., 1958	27.4	10.9	26.6	28.8
30 May, 1958	27.1	10.8	29.3	27.8
31 June, 1958	27.7	11.0	29.2	27.6
32 July, 1958	27.8	10.8	30.4	30.5
33 Aug., 1958	27.1	10.5	31.0	29.5
34 Sept., 1958	26.4	10.2	30.2	29.3
35 Oct., 1958	26.9	10.6	34.2	30.6
36 Nov., 1958	26.8	10.0	32.8	29.9
37 Dec., 1958	27.4	10.7	35.3	30.8
38 Jan., 1959	No rolls submitted during this period.			
39 Feb., 1959	27.0	10.6	31.6	28.9
40 Mar., 1959	No rolls submitted during this period.			

TABLE XXV

TABULATION OF CURRENT AVERAGES BY PERIODS FOR MACHINE U

Period	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
37 ^a Dec., 1958	27.5	10.1	39.4	30.2
38 Jan., 1959	27.5	10.5	36.4	30.6
39 Feb., 1959	No rolls submitted during this period.			
40 Mar., 1959	No rolls submitted during this period.			

^a No rolls were received for evaluation prior to this time.

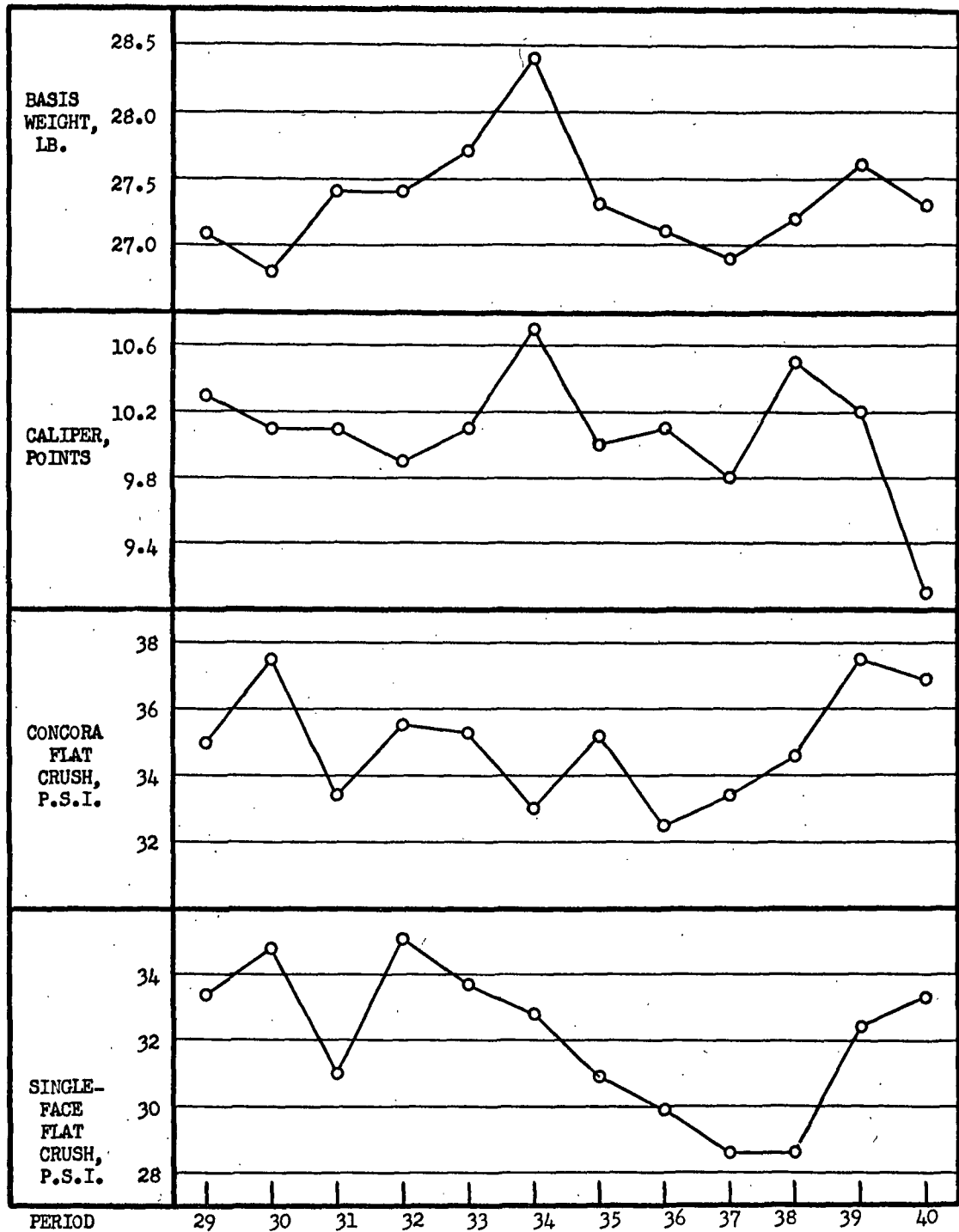


Figure 3

Comparison of Current Averages by Periods for Machine A

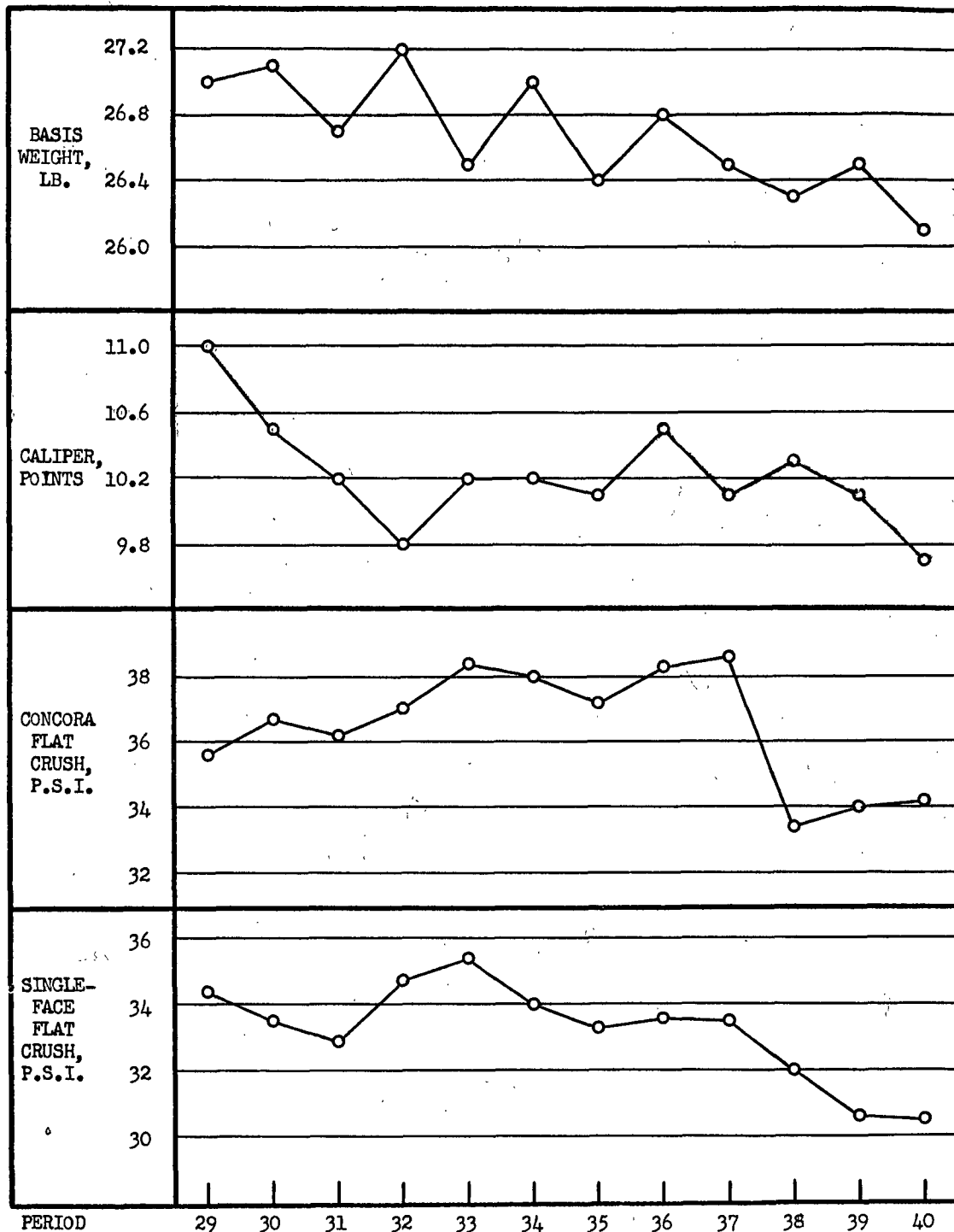


Figure 4

Comparison of Current Averages by Periods for Machine B

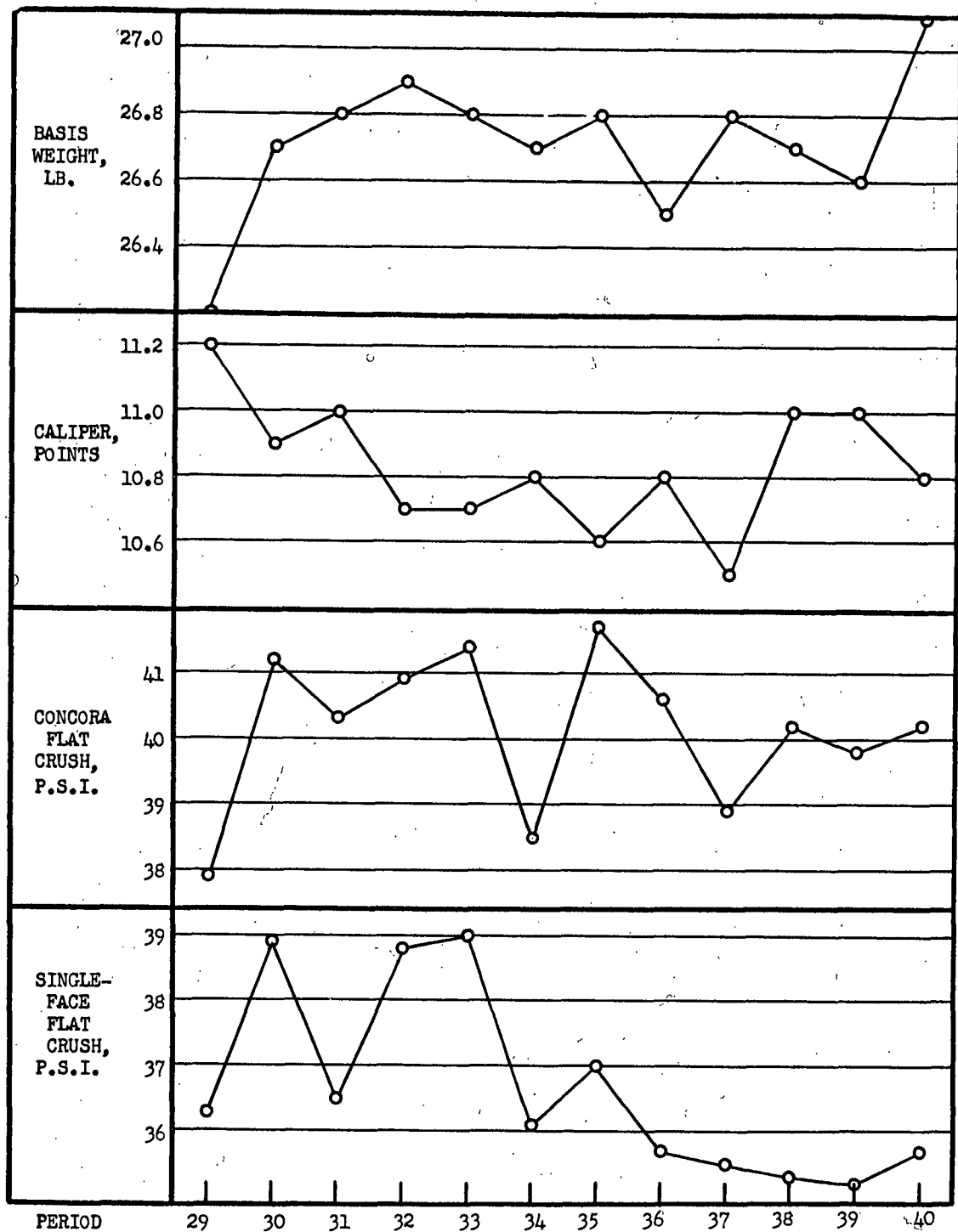


Figure 5

Comparison of Current Averages by Periods for Machine C

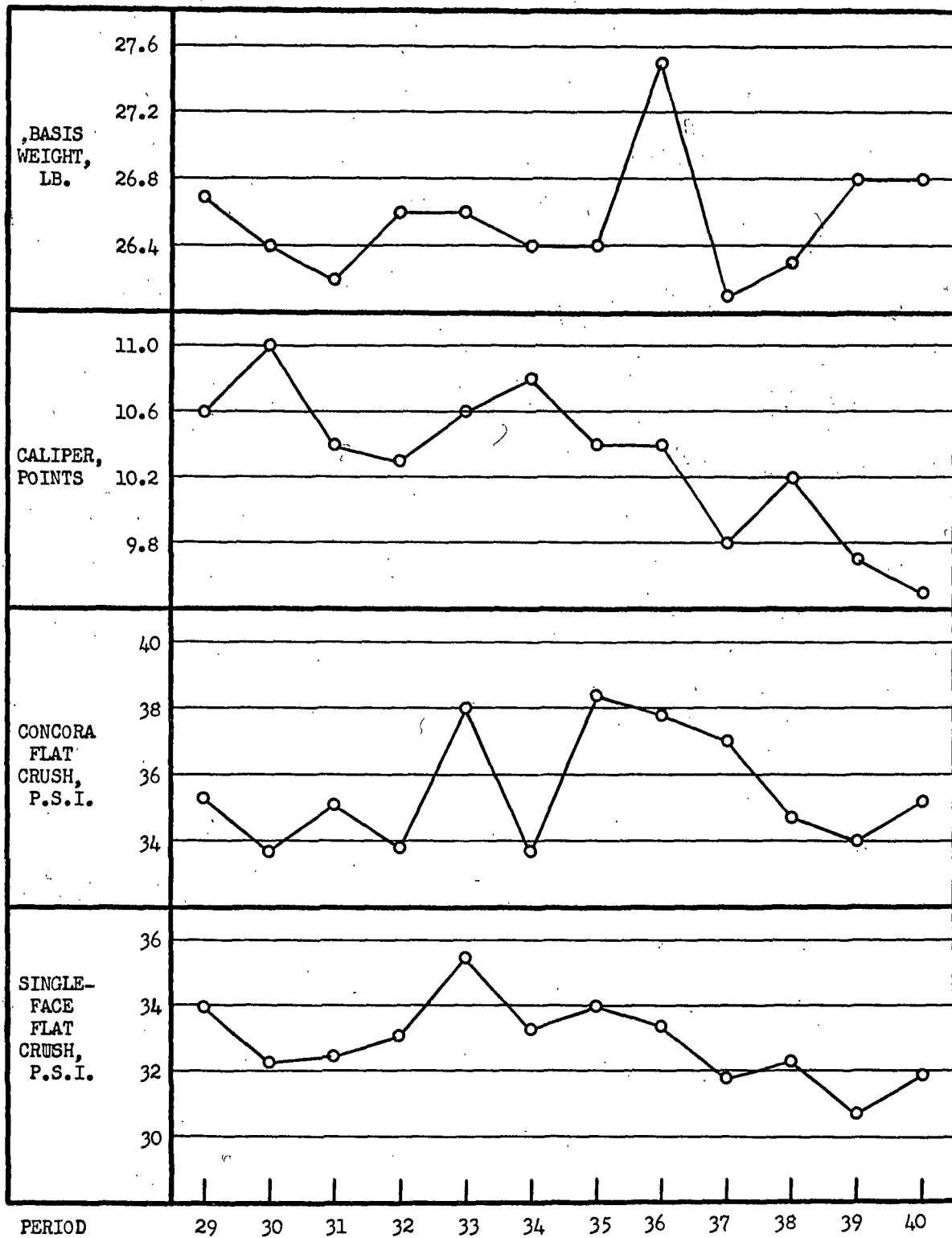


Figure 6

Comparison of Current Averages by Periods for Machine D.

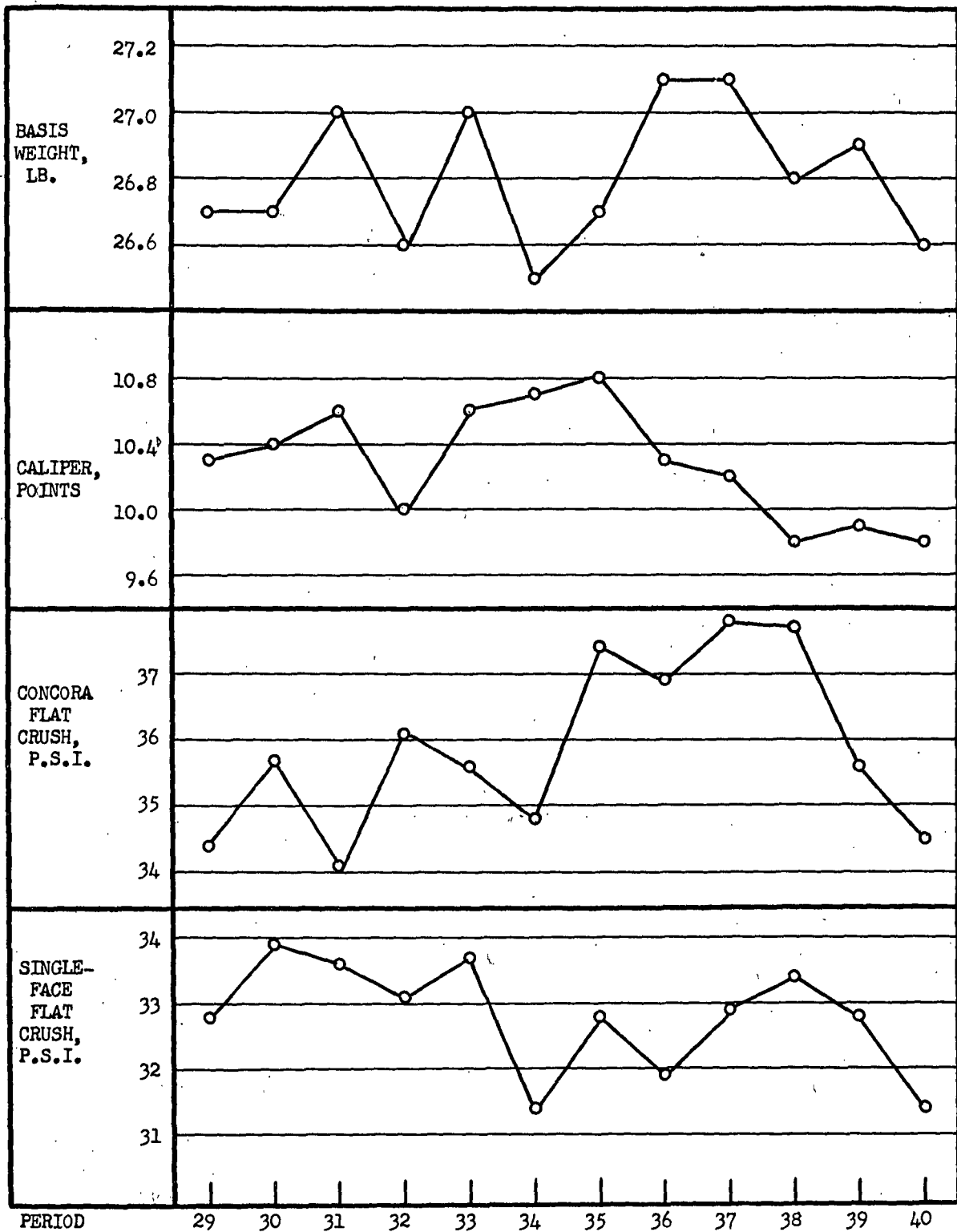


Figure 7

Comparison of Current Averages by Periods for Machine E

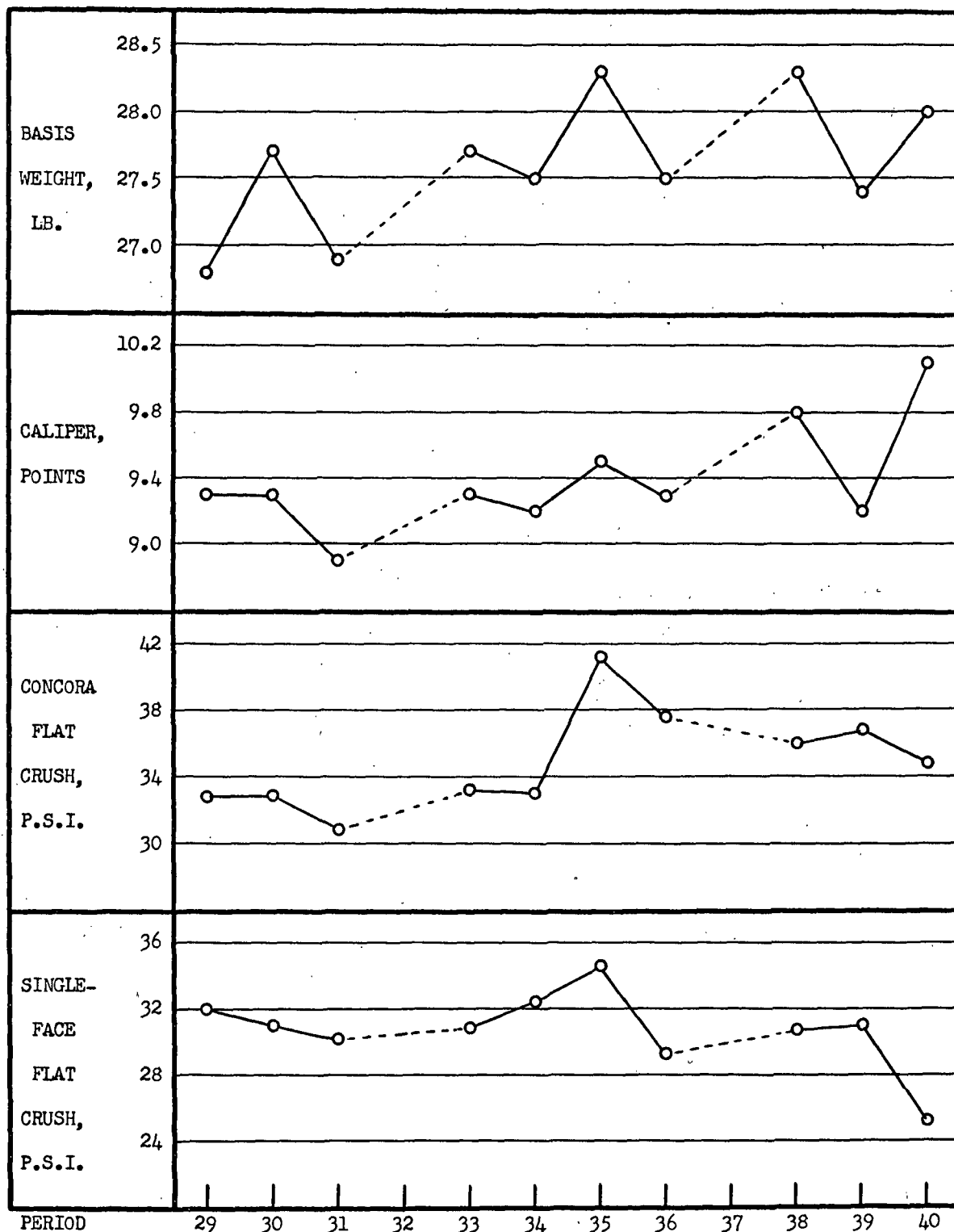


Figure 8

Comparison of Current Averages by Periods for Machine F

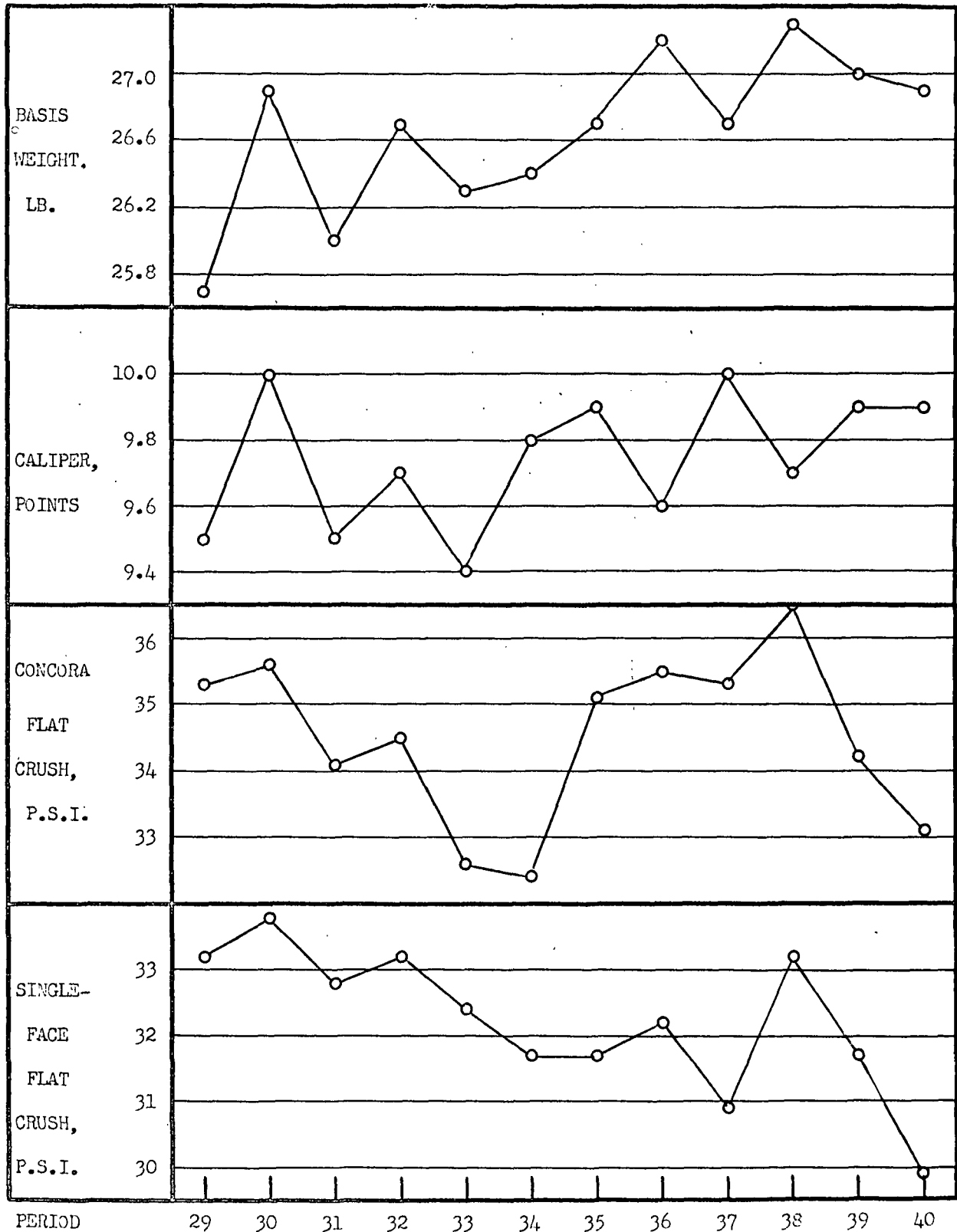


Figure 9

Comparison of Current Averages by Periods for Machine G

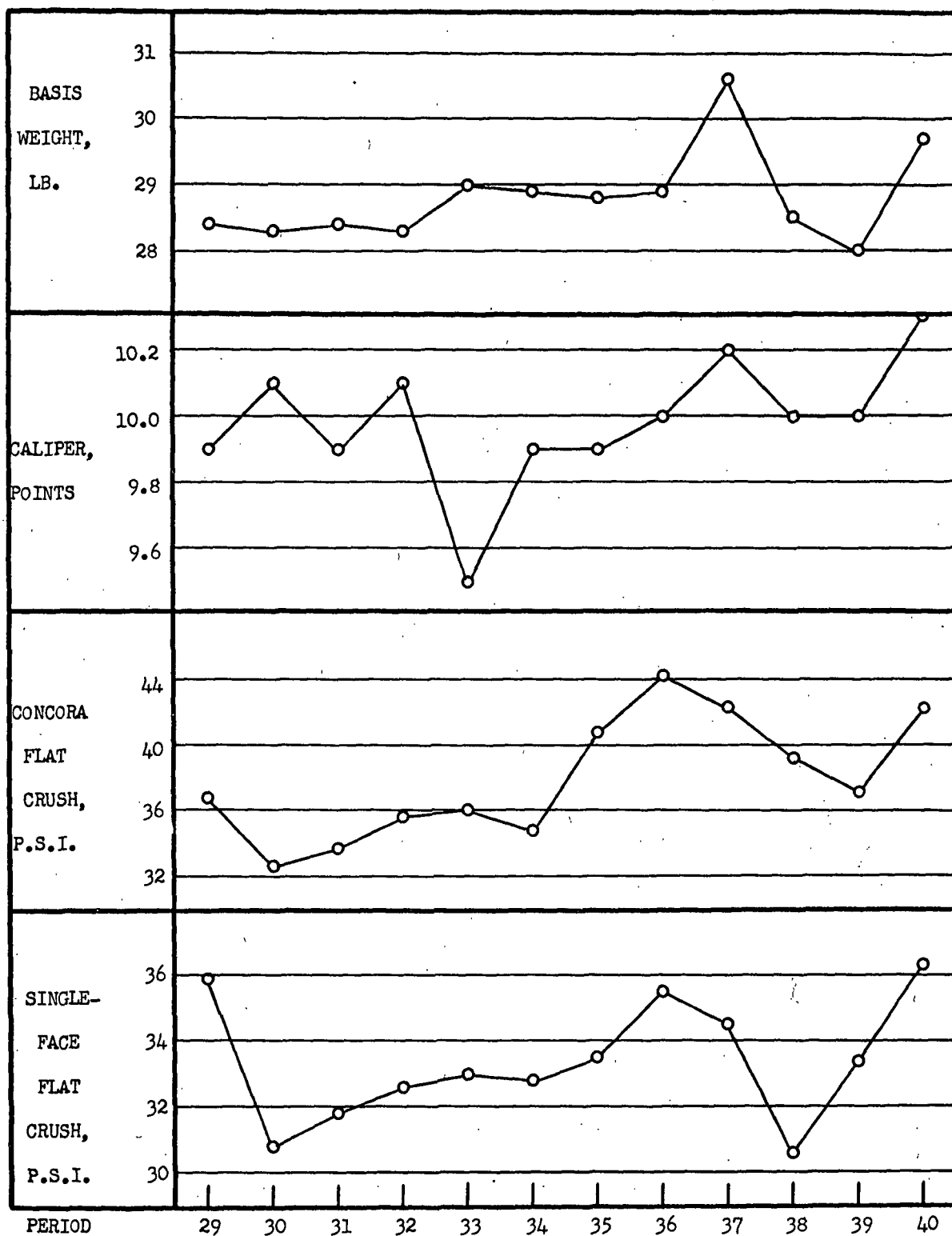


Figure 10

Comparison of Current Averages by Periods for Machine H

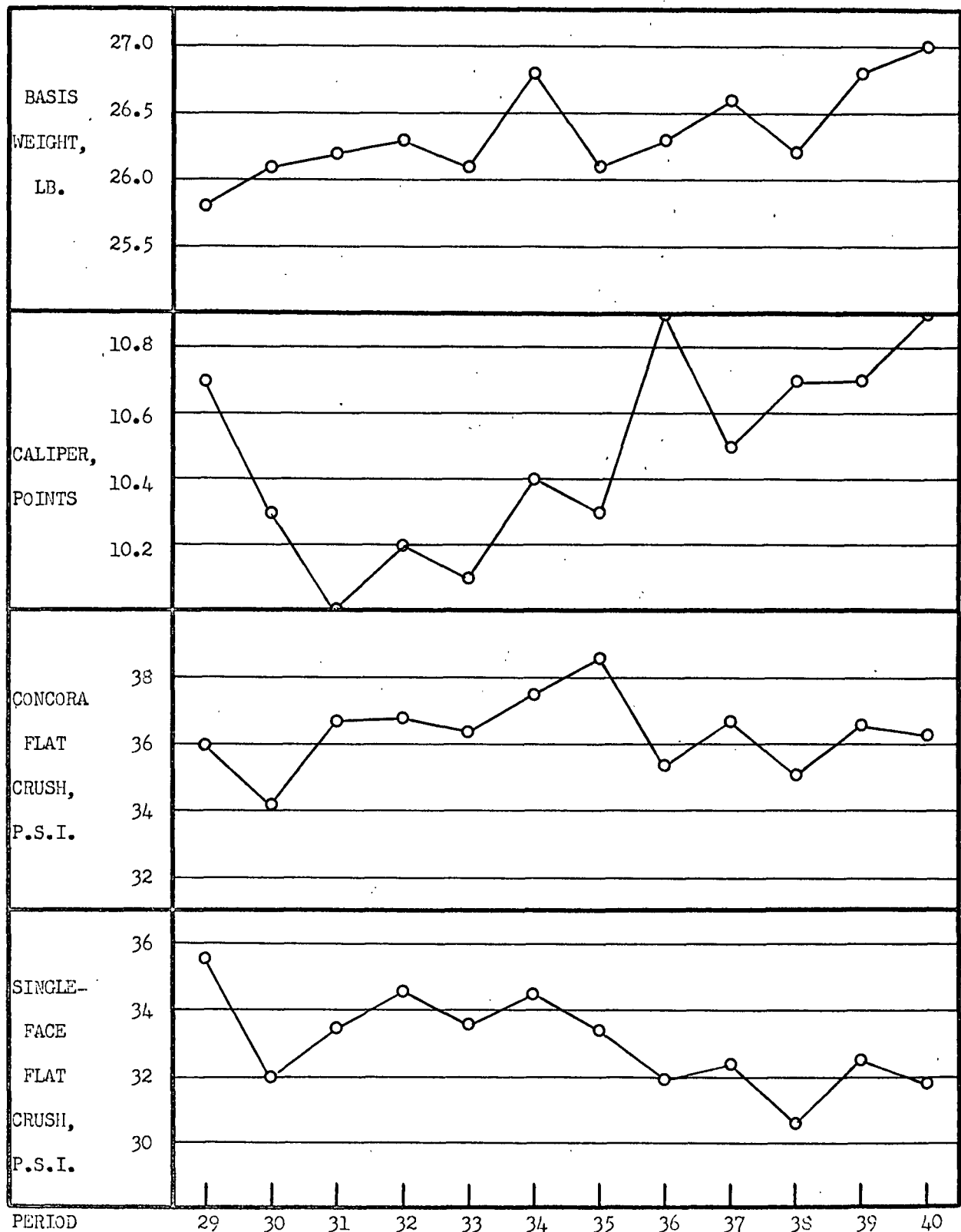


Figure 11

Comparison of Current Averages by Periods for Machine I

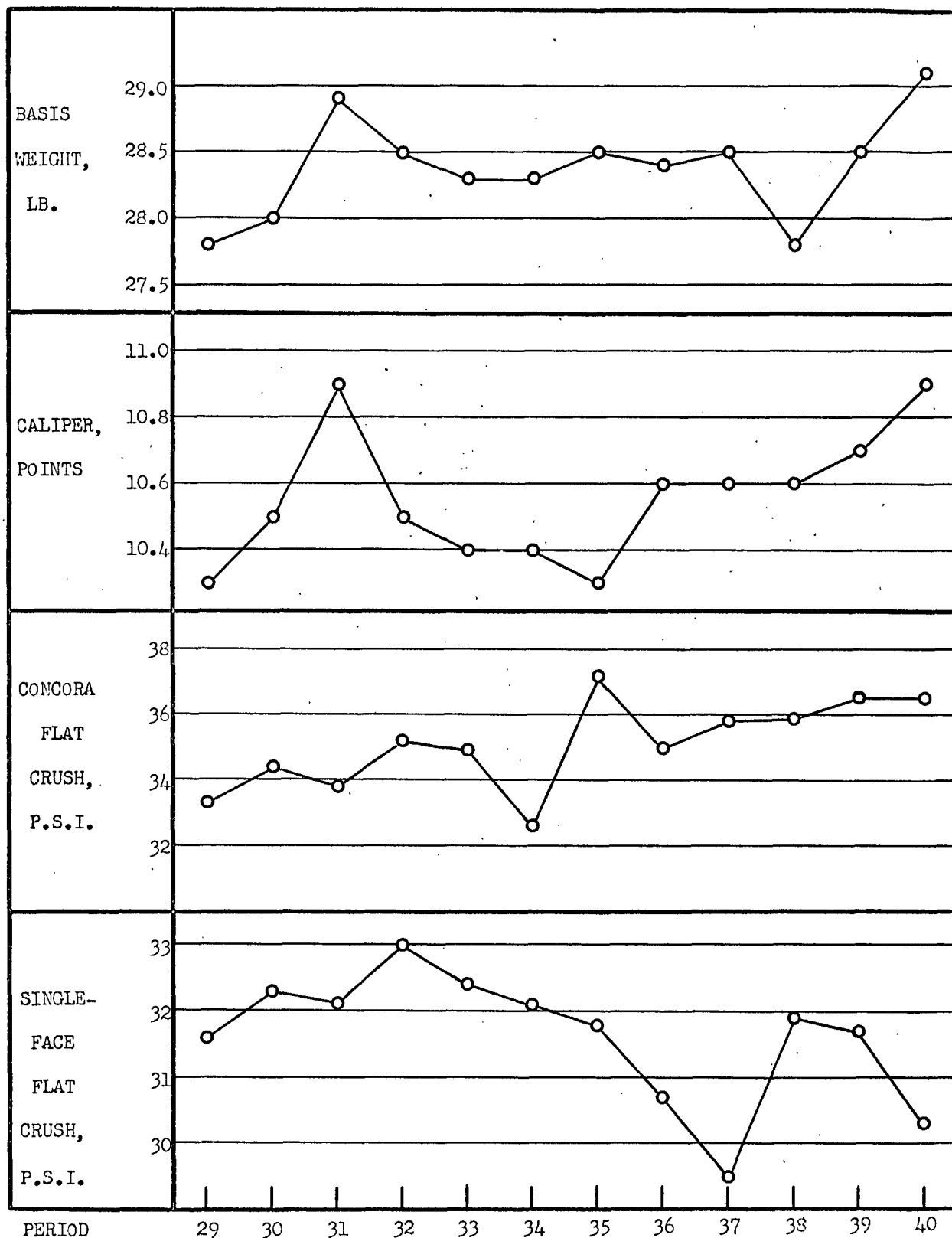


Figure 12

Comparison of Current Averages by Periods for Machine J

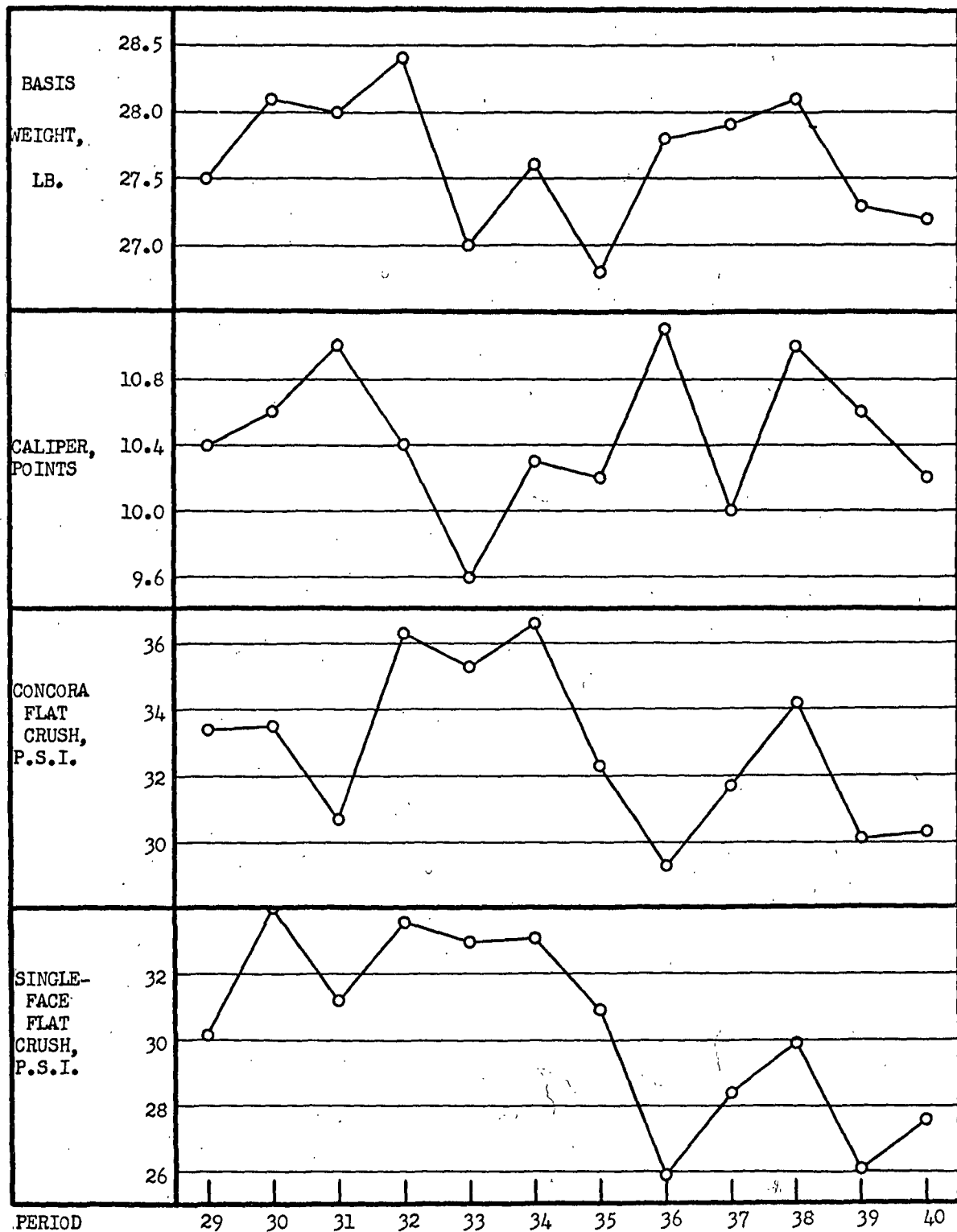


Figure 13

Comparison of Current Averages by Periods for Machine K

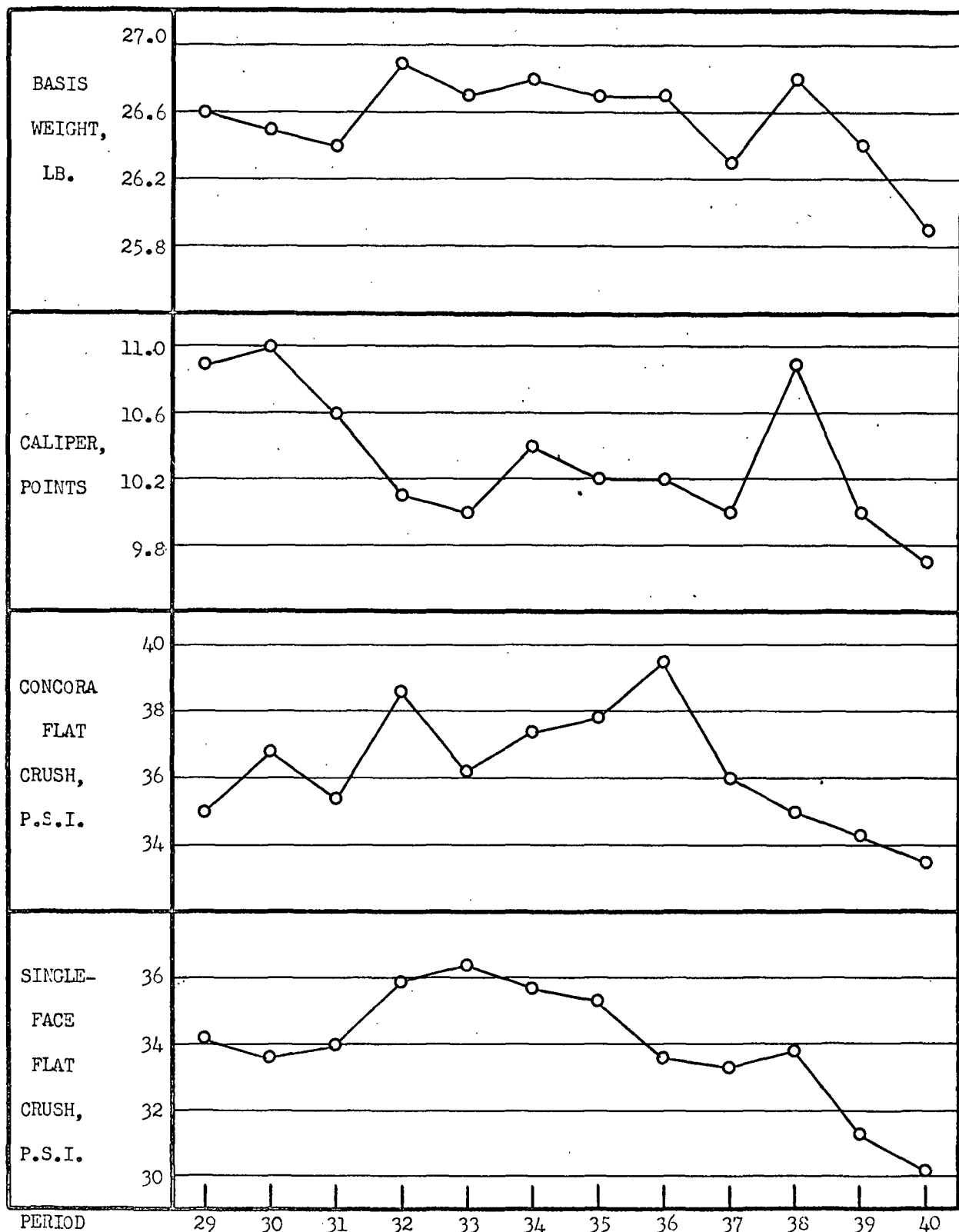


Figure 14

Comparison of Current Averages by Periods for Machine L

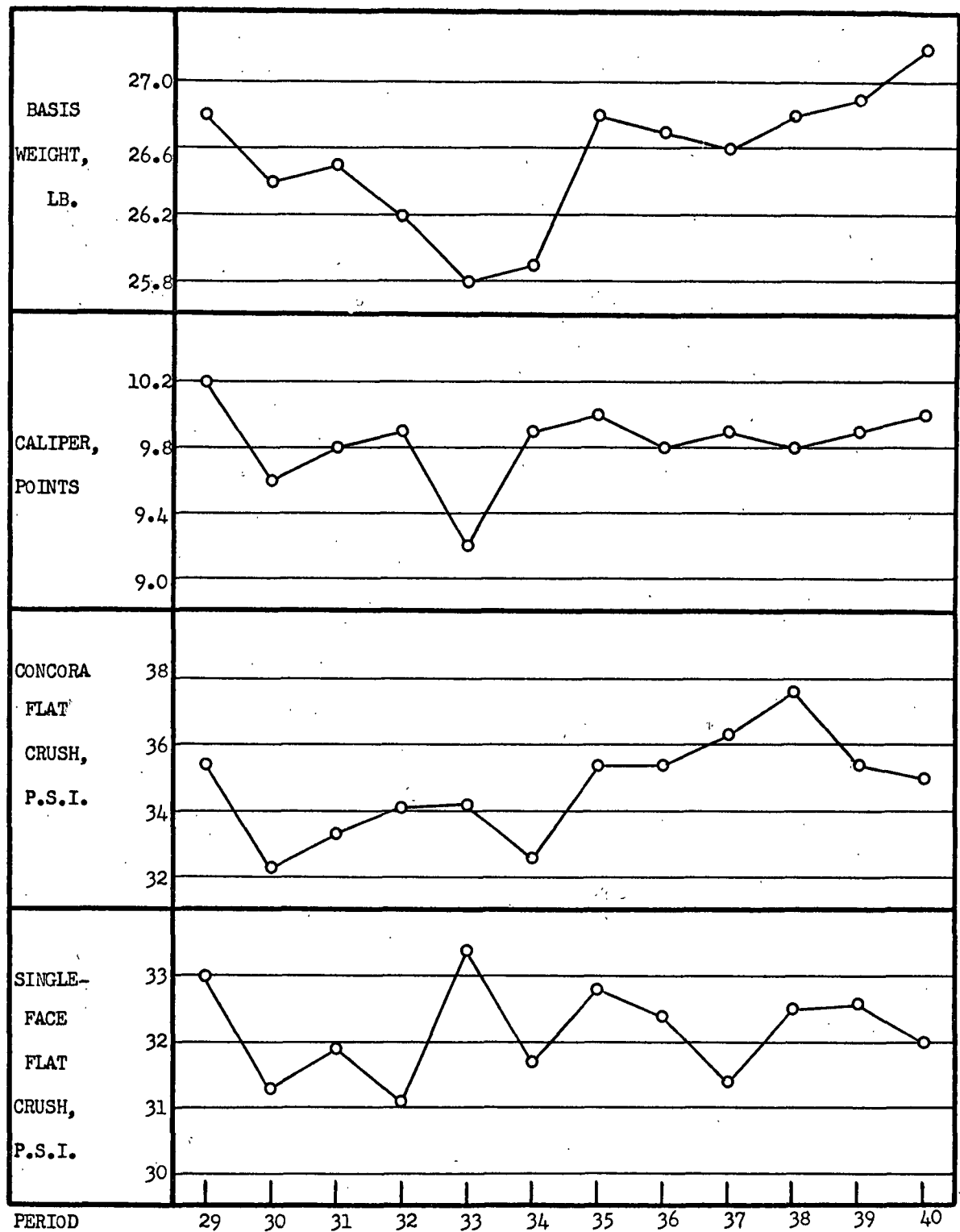


Figure 15

Comparison of Current Averages by Periods for Machine M

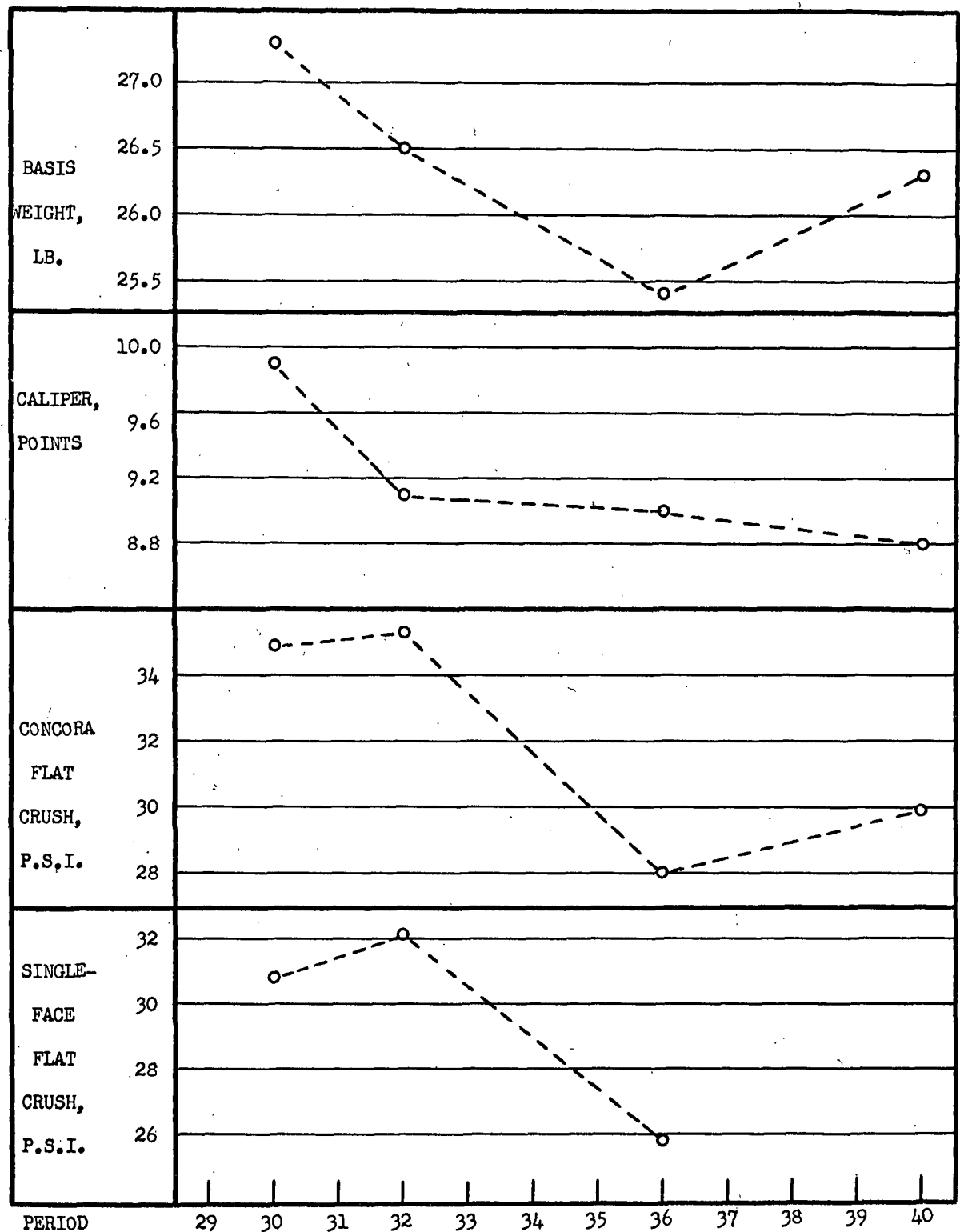


Figure 16

Comparison of Current Averages by Periods for Machine N

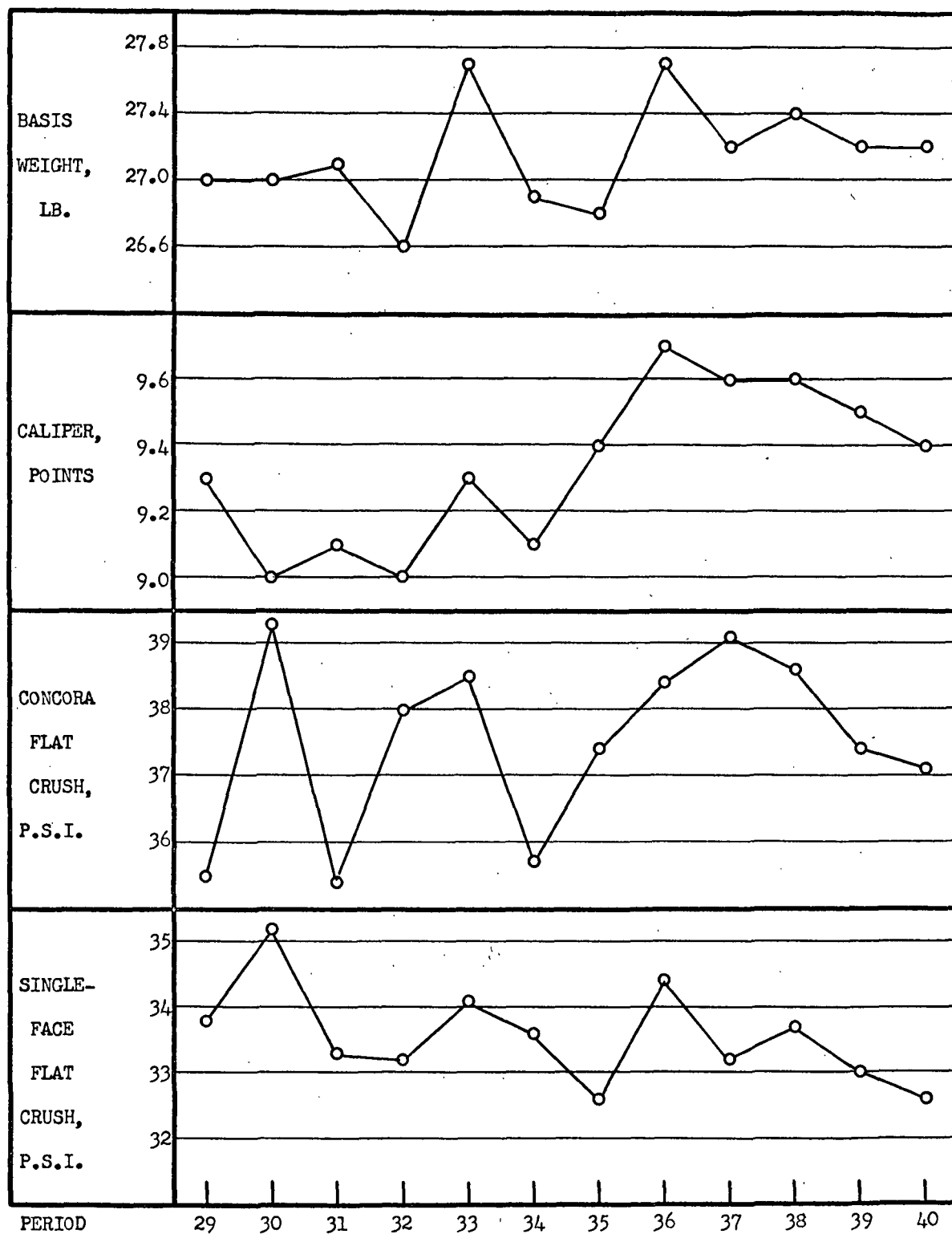


Figure 17

Comparison of Current Averages by Periods for Machine 0

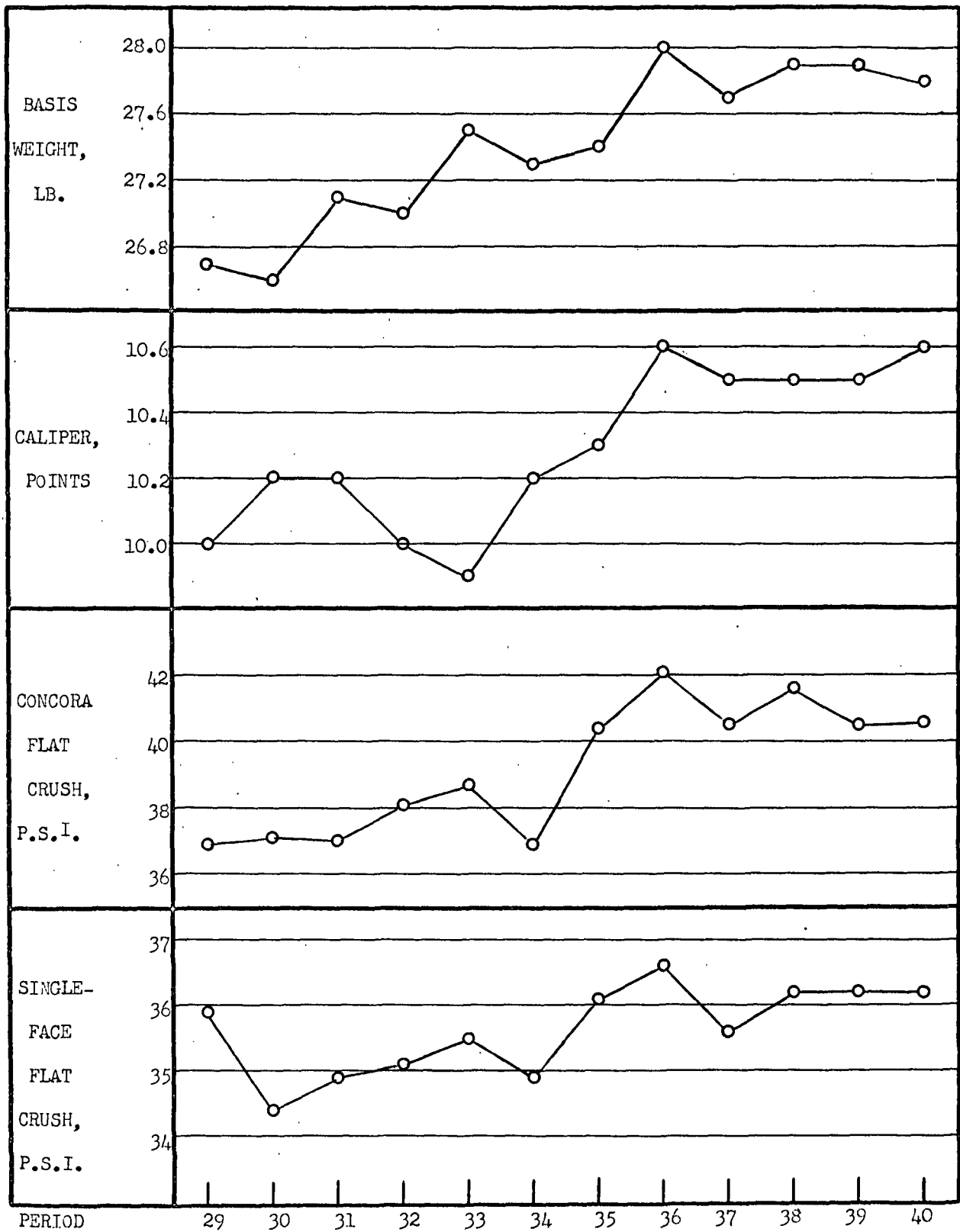


Figure 18

Comparison of Current Averages by Periods for Machine P

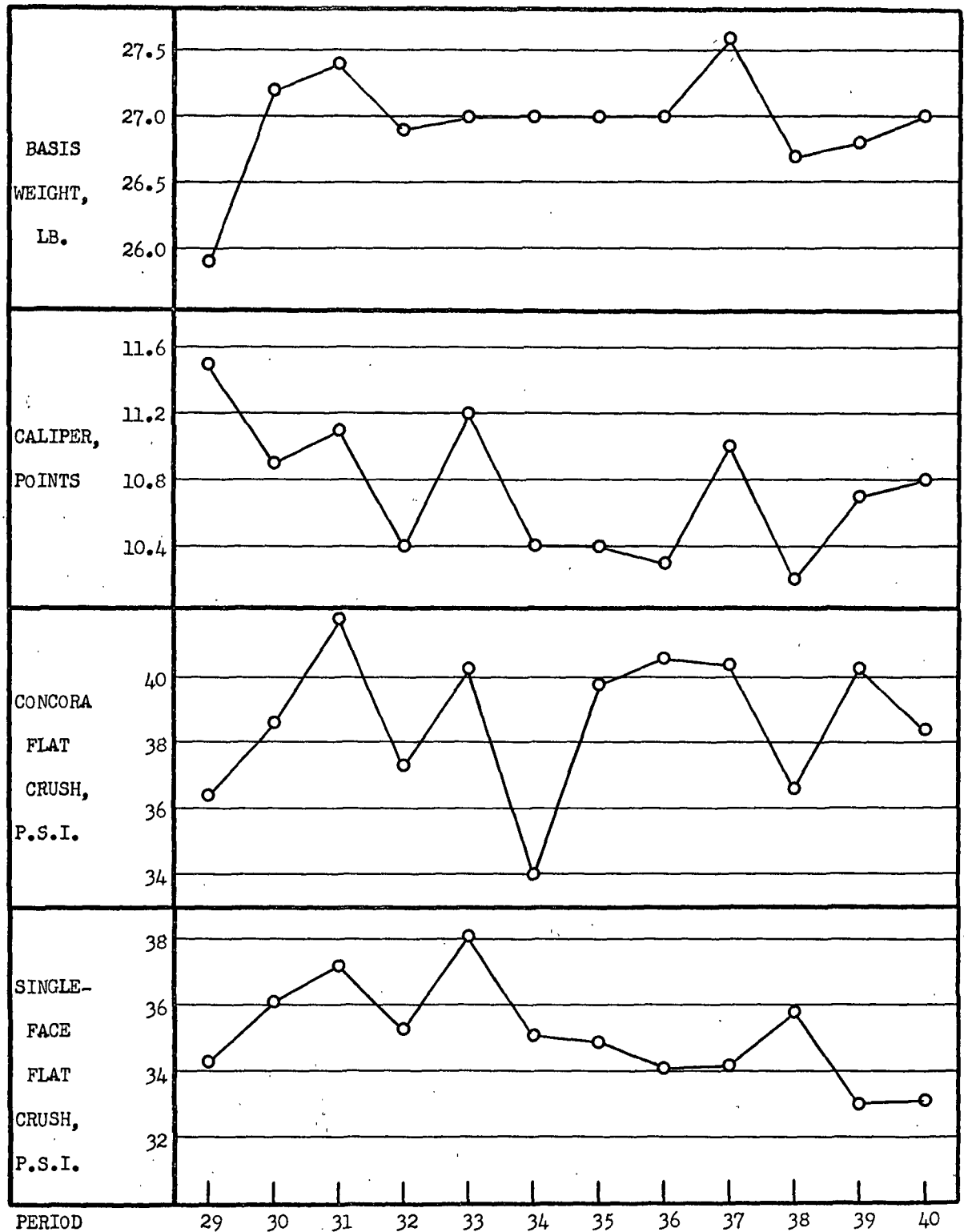


Figure 19

Comparison of Current Averages by Periods for Machine R

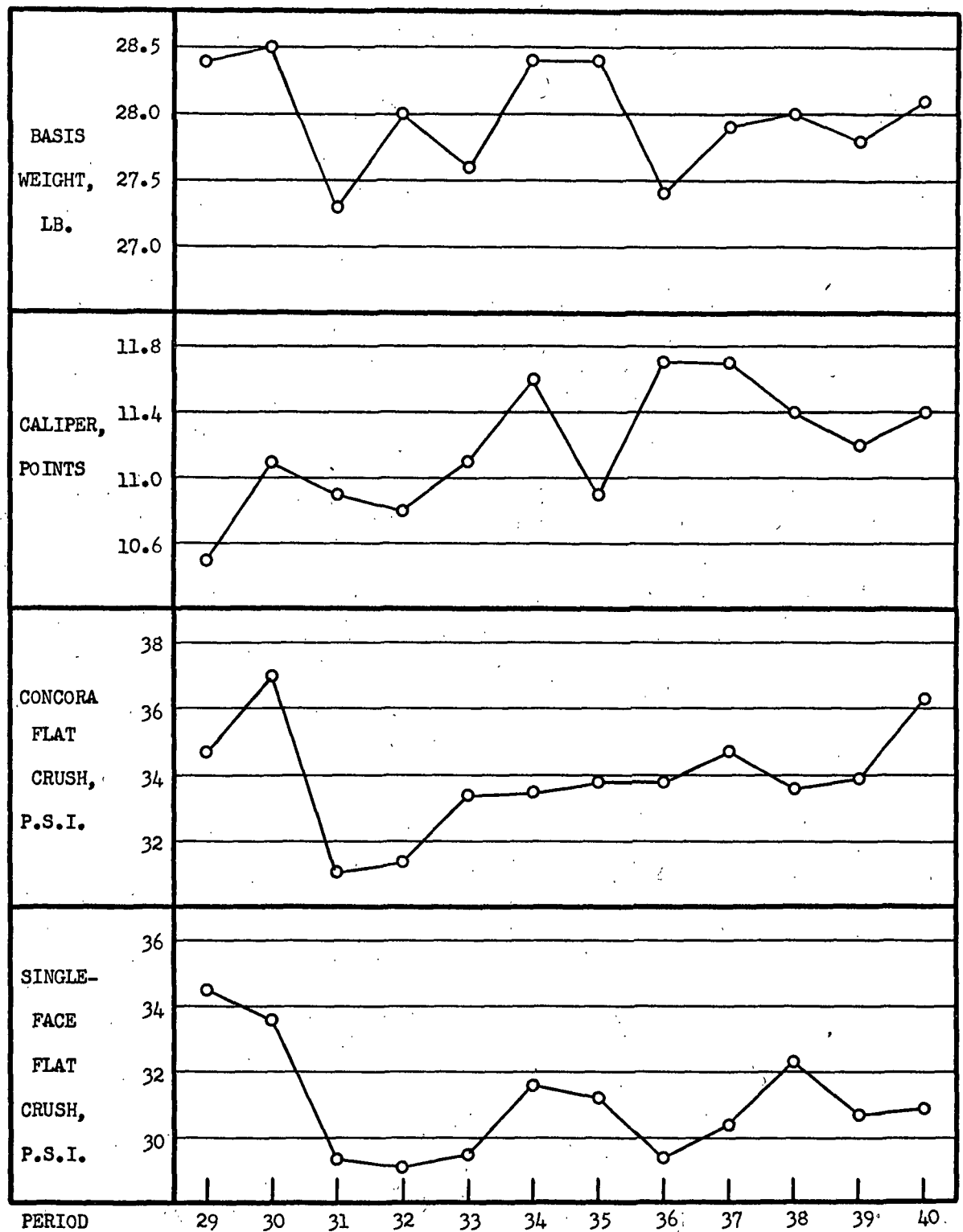


Figure 20

Comparison of Current Averages by Periods for Machine S

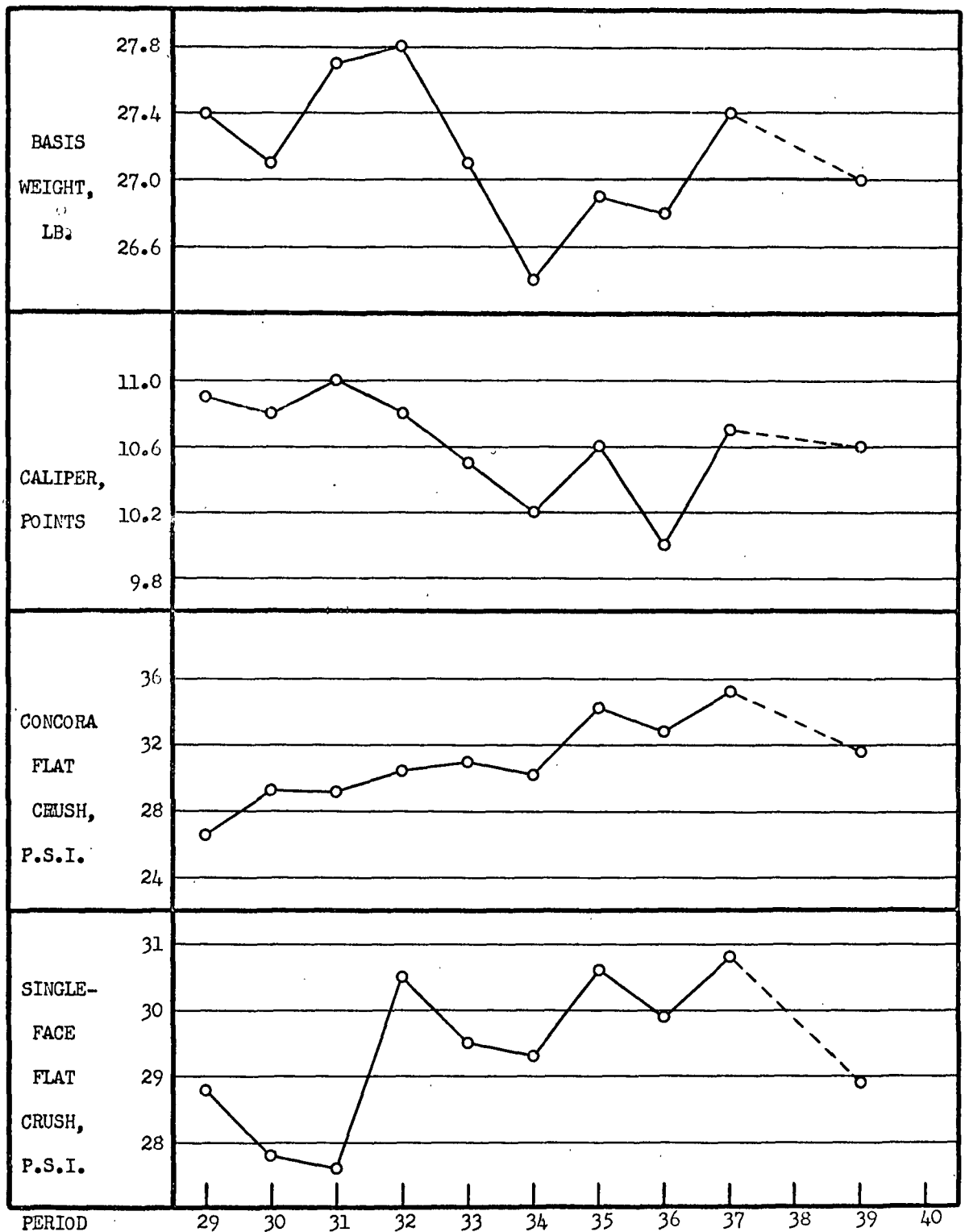


Figure 21

Comparison of Current Averages by Periods for Machine T

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