

Leg strength was considered very important for developing this skill as an enormous strain is put upon the legs in what would normally be an awkward position. Therefore, an extensive weight training program was introduced as instruction (see Chart 3). In the second phase full front squats were dropped from the weight training because the strain on the knees caused by the Cossack dance was too much when combined with this exercise. In the third phase back squats were added to develop a different part of the leg muscle, and one legged deep knee bends were introduced because the movement is similar to the Cossack dance. In Phases 4 and 5 the assessment was changed to alternate days and the weight training reduced to two days a week because Ron found that overworking his muscles was counterproductive. Although Ron has not yet mastered Russian Cossack dancing, he did learn to do the squat kick with some degree of proficiency as Chart 3 and his demonstration of that skill for me in the hallway outside my office indicates.

The second group of projects used Precision Teaching skills to change the behaviors of other people. In the first example, a student used Precision Teaching to help solve the "damp newspaper syndrome." In the second project, a student helped middle school students learn to behave better in class by monitoring their teacher's behavior.

#### **Increasing the Accuracy of Newspaper Throws.**

Reuven, a newspaper boy, had difficulty throwing newspapers accurately. He could throw "on target" from short distances, but the style and speed of long distance throws often left the paper in the mudpuddle at the bottom of the stairs, in the driveway or the flower garden. Judy, a PT student and newspaper subscriber, was motivated by the loss of several papers to help Reuven increase his accuracy of newspaper throws.

For five days each week, Reuven and Judy met just outside her apartment. Reuven stood at the top of the stairwell (approximately 1 meter high) and 5.5 meters from a target (the doormat). The behavior measured was the number of centimeters from the target on a single throw. During the baseline assessment, Reuven typically was close to 100 cm from the target (see Chart 4). Judy then began practice sessions with Reuven to help him increase his accuracy. These practice sessions had the desired effect of helping him land the newspaper closer to the mat. As Reuven became more accurate, Judy introduced a practice "fake throw." She asked Reuven to visualize how the paper would travel to the mat and to imagine it landing on the mat before throwing. During this instructional phase, Reuven was able to meet his goal of two

consecutive mat "hits" in a row and Judy happily read dry papers.

**Decreasing Talk-outs.** Tom was assigned to a middle school special education class for his Precision Teaching practicum. He was asked to collect data by the teacher on the talk-outs of her students during a thirty minute class discussion period. Chart 5 shows the data from one representative student. Don did have a problem with blurting out the answers and talking out. His hand raises occurred about once every ten minutes and the talk-outs occurred more frequently. Tom noticed however, that often when students blurted out the answer, the teacher responded to them anyway and allowed them to answer the question. He decided that the most effective way to decrease talk-outs would be for the teacher to change her behavior. Fortunately, the teacher held the same opinion and asked Tom to give her feedback each day on the number of times she required students to raise their hands and the number of times she forgot (see Chart 6). As Charts 5 and 6 indicate, as the teacher changed her behavior, the target student also increased hand raising and decreased his talk-out behaviors.

These examples are just a few gleaned from the years of Precision Teaching classes. They are intended to stimulate students and practitioners alike to think about areas outside the domain of simple academic skills that would benefit from careful definition and monitoring.

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Marie Eaton is a member of the special education faculty at Western Washington University, Bellingham, Washington 98225. The remaining authors are her students.

#### **ALL THE KNOWN PRECISION TEACHING REFERENCES**

**John W. Eshleman**  
West Virginia University

In this article I describe the results of a two-year-long literature search, where the object of the search was to track down and obtain all of the Precision Teaching and/or Standard Celeration Chart references.

I conducted this search mostly out of interest. For me it proved to be a rather entertaining enterprise. The strategy in doing it was not to acquire the most salient references, but rather to try to get all of them. The resulting compilation holds considerable practical utility as well--one reason why I use the term "data-base."

You have at your fingertips a fairly thorough listing of what has been done in the field. This sort of data-base comes in handy when doing research, a literature review, when finding works by a certain author, or works in a particular subject.

On a floppy disk I have over 700 references pertaining to Precision Teaching and/or Standard Celeration Charting. At the present there are 715 references. These span the years 1965 through 1982.

### **Search for the References**

I began the search with the references that I had already (e.g. books and all the issues of the **Journal of Precision Teaching**). Next, I did some of the search in the university library, looking through the card catalog by the last name of "chart people" (people active in the field), and doing an ERIC search the same way. Also, once I obtained a book or journal article my next step was to look at the references listed in their reference section and note the Precision Teaching references they referred to. When possible I tried to get ahold of such works so I could see whether they were indeed ones that deserved inclusion. This portion of the search was probably inexact since judgment calls had to be made, especially if the work referred to was not available. Fortunately, quite a few Precision Teaching works contain cues in their titles that made classification easier.

As another part of the search I went through all of the Association for Behavior Analysis convention program guides and the Winter Precision Teaching Conference program guides. I included every presentation in the latter, but with the ABA guides some judgment calls again had to be made. Generally, I cued in on the names of "chart people" in the index first, then went through the program guide carefully, looking for chart-oriented symposia and poster sessions, and finally looking closely at titles. Again, many titles contained cues that simplified classification.

Finally, I rounded out the search by including references from lists compiled previously by others. I had a listing of Lindsley's references through 1972 (Lindsley, 1976) and a Precision Learning Bibliography compiled by Ann Rutherford (n.d.), and a Precision Teaching/Standard Chart bibliography put together by Abigail Calkin (Calkin, 1976).

In November 1982 I began putting the references on floppy disk, using Applewriter II Word Processing software. By January 1983 the data-base was complete through 1982. In April 1983 I updated it to include 1983 references.

When doing the search an arbitrary decision became necessary. The current end point in time of the data-base is easily defined. It is the present. But when did Precision Teaching begin? In some respects the field had no exact beginning. It evolved out of the experimental analysis of behavior and the early human operant work done by Lindsley and others. We do not find a significant number of explicitly Precision Teaching references until 1967 (when there were 9). The data-base, however goes back a couple of years before that to 1965 as an arbitrary starting date. The reason is that in 1965 Lindsley invented the Standard Behavior Chart—the one with six cycles, although he was using summary charts with logarithmic axes as far back as 1956 when he was at Metropolitan State Hospital (Lindsley, 1983). Anyway, 1965 makes for a convenient starting date. There could not have been references with Standard Behavior Charts before this time, and Standard Behavior Charts are one of the primary distinguishing features of Precision Teaching. Again, though, the roots of Precision Teaching go back to 1938 to Skinner's **The Behavior of Organisms**. This implies that Precision Teaching can be thought of as part of the larger field of human operant behavior analysis.

### **A Brief History on Yearly Charts**

Charting practices can be applied to the data-base. Since all but a few references contained a publication date a yearly count of them can be taken. Once done various celeration trends in the data can be observed. These measures do give us a pictorial representation of the history of Precision Teaching. Chart 1 presents the overall picture, the frequency of references per year from 1965 through 1982. The picture depicts the overall growth and trends in our field, and should be reasonably accurate.

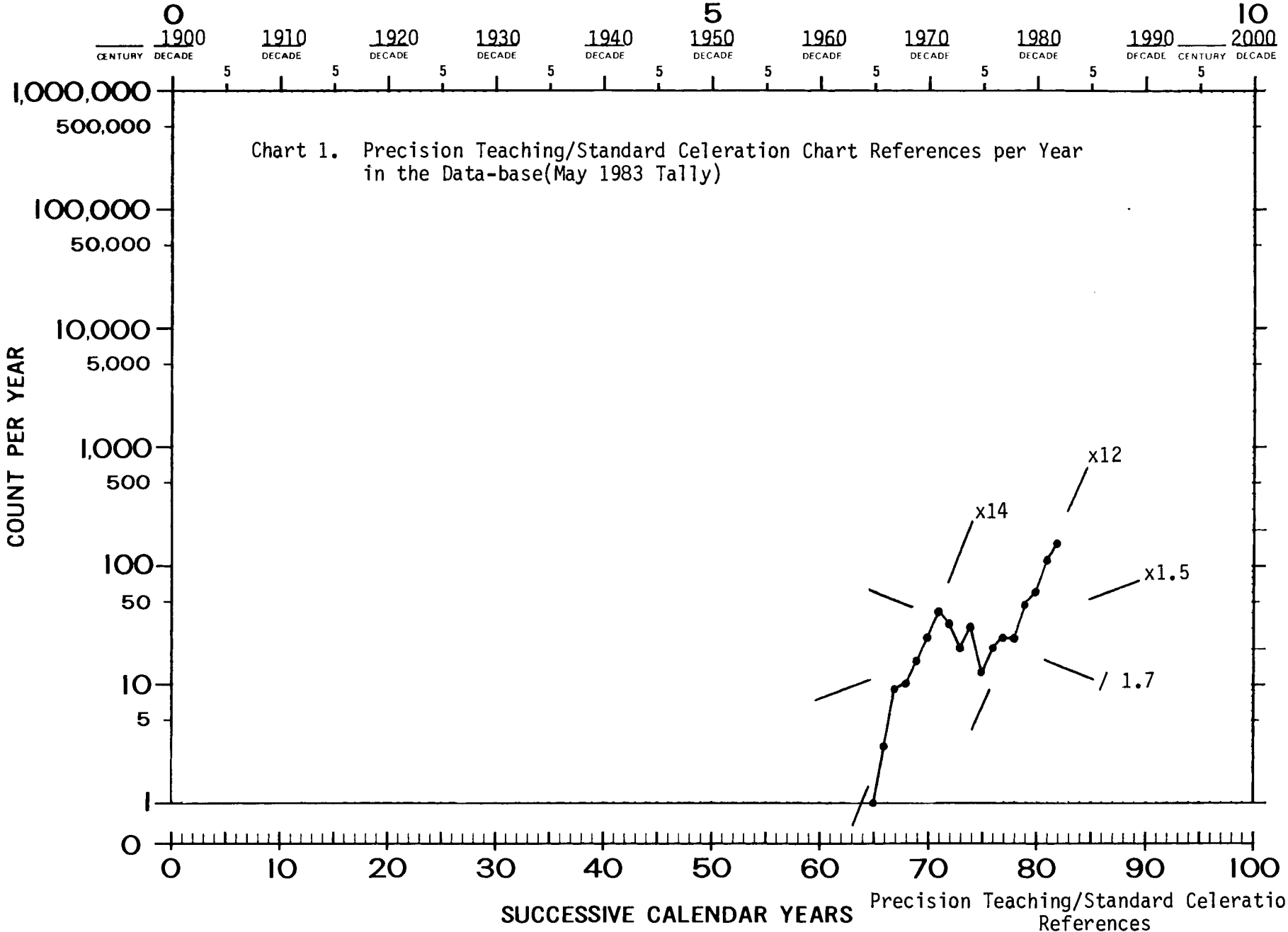
From 1965 through 1982 there has been a  $x1.5$  overall celeration. The growth has not been steady, however. The overall celeration ignores substantial trends. Trend-following celerations present a better picture. Three major trends characterize the history. During the early years from 1965 to 1971 there was a  $x14$  acceleration. Then, significantly, the celeration turned down to a  $/1.7$  from 1971 to 1978. Recently, 1978–1982, there has been a  $x12$  resurgence.

The decline in Precision Teaching during the 1970's is especially interesting. According to Lindsley (1983) this deceleration was the cost of having Precision Teaching go from having been just in special education and moving into regular education. This move did not bring about an immediate celeration turn-up because "it took

# CALENDAR DECADES



YEARLY BEHAVIOR CHART (YCM-1EN)  
6 CYCLE — 100 YEARS (10 DECADES)  
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BOX 3351 — KANSAS CITY, KANS. 66103



Eshleman, John W., All the known Precision Teaching references.

Journal of Precision Teaching, Vol. IV, No. 3, Fall, 1983

SUPERVISOR	ADVISER	MANAGER	COUNTER	CHARTER	COUNTED
Chart drawn: 1 Sep 83				J. Eshleman	

about five years for regular education people to get hatched and grown" to borrow Lindsley's expression.

That they have begun to hatch and grow is clear from the data in Chart 1. From the data-base we can analyze and at least partially account for the most-recent trend. If we chart references appearing only in the ABA program guides, the issues of the **Journal of Precision Teaching**, and the Winter Precision Teaching Conference guides all taken together we get the picture shown in Chart 2. These three vehicles for publication and presentation together have a x17 celeration covering 1975 through 1982. If these references are subtracted from the totals, there is a /1.8 celeration from 1971 through 1982. The data in Chart 2 demonstrate that over the last several years more and more documented communication about Precision Teaching has been increasingly confined to three channels. The data also indicate that these three communication channels have served as a necessary although not sufficient condition to explain the recent celeration turn-up. For one thing they have made communication easier. They have opened up channels that previously did not exist, thereby making reliance on other channels less needed. Of course, the creation of communication vehicles dedicated wholly or in part to Precision Teaching cannot be the sole reason for the recent turn-up. The people who entered the field during the later '70s are maturing with the field, are becoming more established, and are doing more. And more people are entering the field. Moreover, other necessary conditions must include the fact that Precision Teaching works and accomplishes more, at least in terms of student learning, than other systems do. As the "high technology" of education evolves the field is becoming more scientific (success is measured) and product-oriented (the focus is on better learning).

As Chart 3 shows, the inception of the **Journal of Precision Teaching** in 1980 and the Winter PT Conference in 1981 taken together, account for a substantial part of the recent acceleration trend: Over the past three years this combination of purely Precision Teaching oriented publications and presentations has had an astounding x67 acceleration (one that will most likely not be maintained).

Chart 4 shows the increasing frequency of chart-based and/or Precision Teaching presentations at the ABA conventions. The overall celeration of X9 is consistent with data reported by Graf (1982), who counted "chart people" per year in the ABA program guides.

Pictures of the changes in growth of references cannot serve as the total picture of the growth

of the field. Other measures, perhaps equally or more difficult to obtain, would also show the history of Precision Teaching. These other measures might include: (1) the number of schools/year where charting occurs, (2) the number of students/year who chart, (3) the number of behavior change projects/year (as were recorded in the Behavior Bank), and (4) the number of graduate student theses and dissertations/year (partially represented in the data base).

Much of the growth of Precision Teaching may not be capturable. The field is notorious for its informal communication. A great deal of communication occurs over the telephone rather than through conferences or journals. These interactions occasionally get cited as "personal communications" in reference notes.

**A SUGGESTION.** With the influx of microcomputers, information will increasingly be communicated by floppy disk. And this raises a couple of germane issues heretofore not considered. First of all, how does one cite in a reference note a computer program or text file? The **APA Publication Manual** makes no proviso regarding such citations because it came out before the microcomputer boom. Therefore, I recommend that the style be according to the following form: "Author. Title of Program. Created on Floppy Disk for the (brand name) computer, in (computer language or word processing software), Date."

#### **Availability of the Data Base**

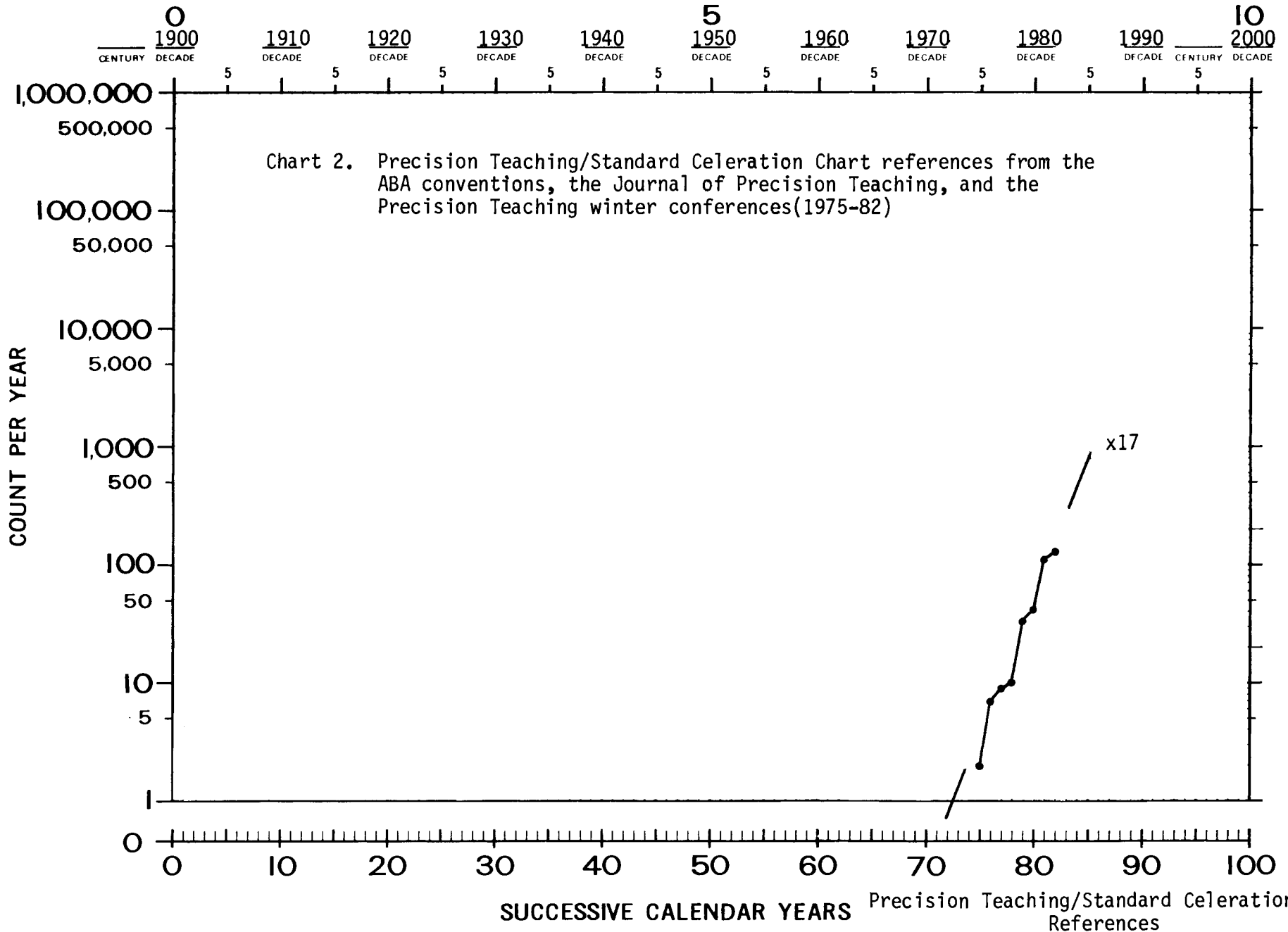
Because the search in some cases included judgmental decisions there are bound to be errors in the data base. Two kinds of errors are possible: Incorrect inclusions and omissions. There probably are some references in the listing that most of us would agree are not, properly speaking, Precision Teaching or Chart references. With regard to errors of omission, I may have overlooked articles in journals I would not think of looking in, or presentations at conferences I am not familiar with. That there are omissions I am certain. Omitted items will be added as they become known. Given that the overriding strategy was to get all references, hopefully omissions have been minimized.

I hope that by disseminating this data-base of references our field will be assisted, our science advanced. For one thing, making the data base available seems to be a way to clean up the data. Regarding errors of omission, if you get a copy of the data and see that something you published or presented has been left out, then let me know and I will put it in. If you find a reference that probably should not be there then let me know as well.

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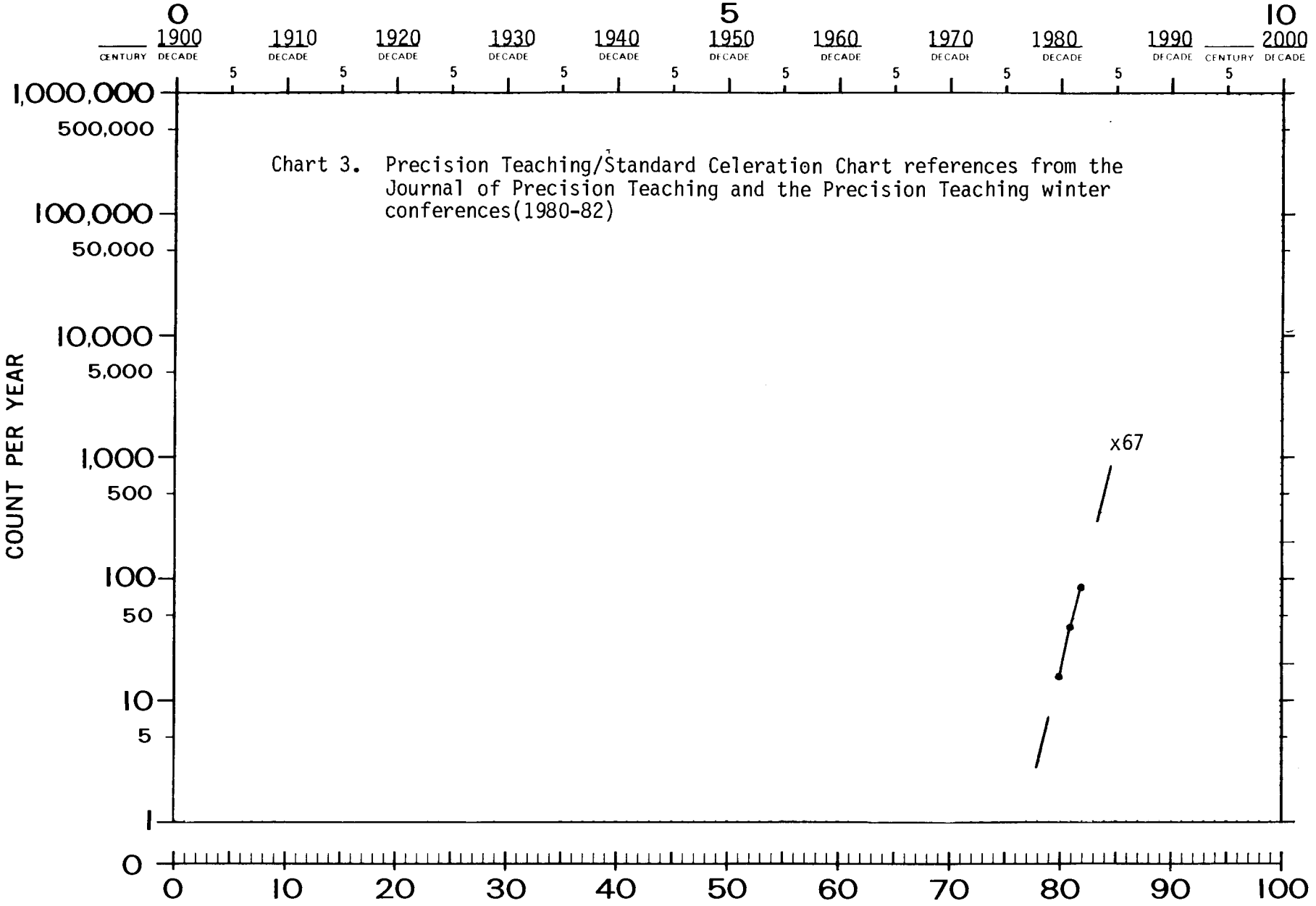


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Chart drawn: 1 Sep 83				J. Eshleman	



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CALENDAR DECADES



Eshleman, John W. All the known Precision Teaching references.

Precision Teaching/Standard Celeration Chart References

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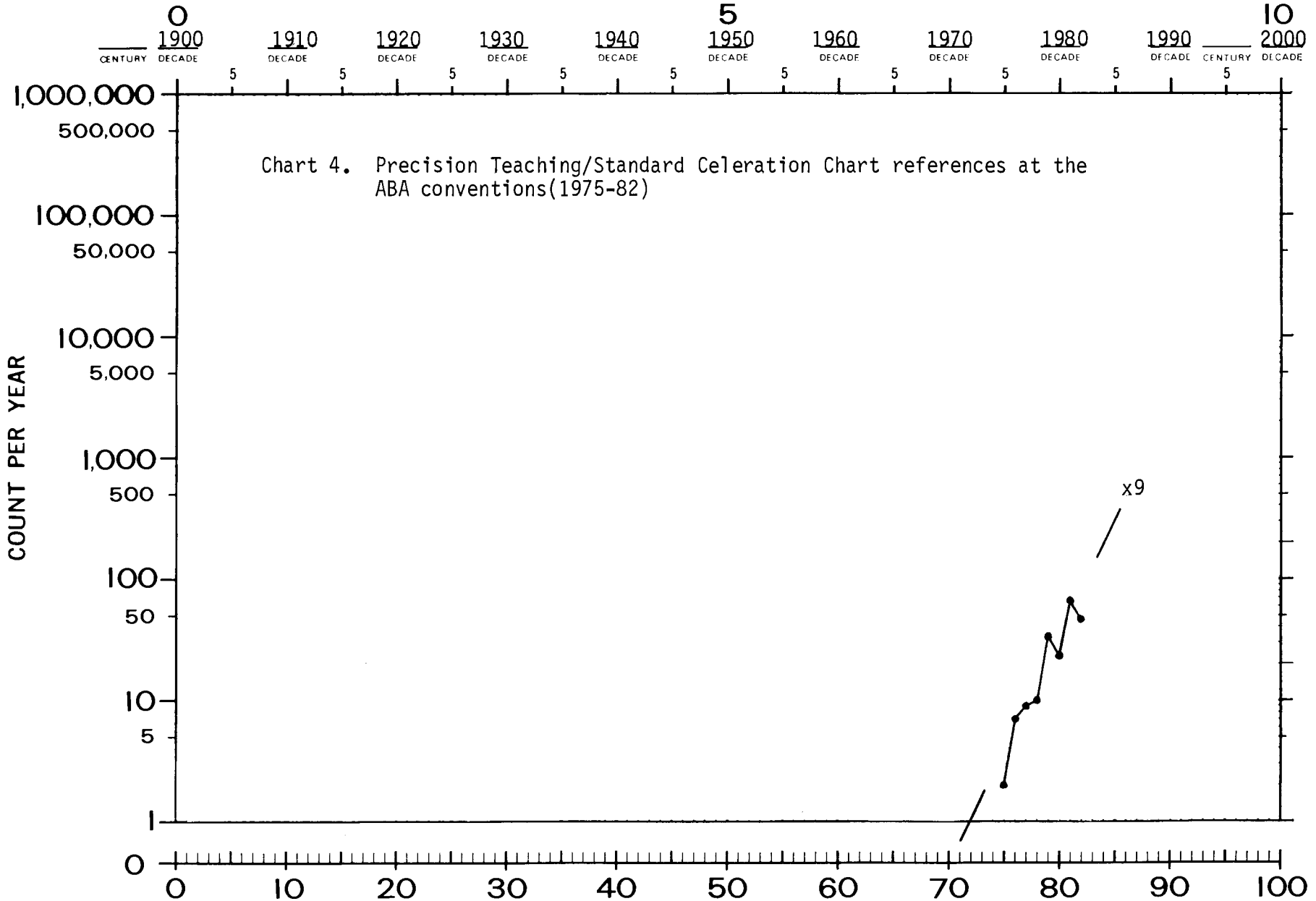


Chart 4. Precision Teaching/Standard Celeration Chart references at the ABA conventions(1975-82)

SUCCESSIVE CALENDAR YEARS Precision Teaching/Standard Celeration Chart References

SUPERVISOR      ADVISER      MANAGER

Chart drawn: 1 Sep 83

COUNTER

J. Eshleman

CHARTER

COUNTED

Again, the data are on two disks (the front and back of one disk will work too). The disks are not protected, nor will they be. The data are available to everyone. For the time being I am willing to be the manager of the data base—to update it. If you want a copy of the disks, here is the arrangement I am making. If you have a blank disk send it along with a self-addressed, stamped envelope and I will gladly make a copy free of charge. The disk should be a soft-sectored, 5 1/4 inch, single density floppy disk (designed for the Apple Computer).

Again, if you have any suggestions or contributions to submit to the data base (additions or deletions) please send them along. Again, the data are free and available to anyone.

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John W. Eshleman is a Research Instructor in the College of Human Resources and Education at West Virginia University, 705 Allen Hall, West Virginia University, Morgantown, West Virginia 26506.

## About PT

#### NOTES FROM THE EDITOR

**Patrick McGreevy**

Susan Ryberg and her colleagues are working very hard to prepare for the 1984 National Precision Teaching Conference. The conference brochure is included in this issue. Please photocopy this brochure and share it with your colleagues. Encourage them to attend. It is important to emphasize that a conference like this is not designed just for experienced Precision Teachers. Many of the sessions will be helpful for beginners and those who have been using the Chart for a short period of time.

If you are planning to attend, please send in your registration and make hotel reservations as soon as possible. This will help Susan and her staff with conference planning and organization.

This issue marks the beginning of two new columns: Around the Chart and Teacher to Teacher. These columns are designed for teachers and other practitioners who are new to the Chart.

We are in the process of arranging for the indexing of JPT in one or more publications. We will keep you posted.

Several subscribers have suggested that we offer 2-year subscriptions. Beginning with Volume V (April, 1984), 2-year subscriptions will be offered.

I think all Precision Teachers owe John Eshleman a debt of gratitude. His was truly a labor of love. John and I are currently working out the details of making the data-base available in print form through Plain English Publications. More on this in the next issue.

#### TEACHER TO TEACHER

**Caryn Robbins**

I remember when Pat Flanagan began to teach me to chart, she would patiently correct me when I talked about "graphing my data." There is a transition period in learning to use the Chart, when you aren't yet thinking like a