Institutional Affiliate of American Congress on Surveying and Mapping.

The California Surveyor

No. 76 The Voice of the Land Surveyors of California Fall, 1984

Table of Contents

The California Surveyor

is the quarterly publication of The California Land Surveyors Association and is published as a service to the Land Surveying profession of California. It is mailed to all Licensed Land Surveyors and Land Surveyors in Training in the state of California as well as to all members of California Land Surveyors Association. *The California Surveyor* is an open forum for all surveyors, with an editorial policy predicated on the preamble to the constitution of the California Land Surveyors Association and its stated aims and objectives, which read:

"Recognizing that the true merit of a profession is determined by the value of its services to society, the 'California Land Surveyors Association' does hereby dedicate itself to the promotion and protection of the profession of Land Surveying as a social and economic influence vital to the welfare of society, community and state."

"The purpose of this organization is to promote the common good and welfare of its members in their activities in the profession of Land Surveying, to promote and maintain the highest possible standards of professional ethics and practices, to promote professional uniformity, to promote public faith and dependence in the Land Surveyors and their work."

Personnel

Owner: California Land Surveyors Association
Central Office: P.O. Box 9098, Santa Rosa, CA 95405
Editor: J.E. Terry, L.S.I.T.
Sales Manager: Lisa Reese

Advertising

Commercial advertising is accepted by *The California Surveyor.* Advertising rates and information can be obtained by contacting Dorothy Calegari / Lisa Reese, P.O. Box 9098, Santa Rosa, CA 95405, (707) 578-6016.

Sustaining Membership

Membership in the California Land Surveyors Association as a sustaining member is open to any individual, company or corporation who, by their interest in the Land Surveying profession, is desirous of supporting the purposes and objectives of this association. For information regarding sustaining membership, contact the Editor of *The California Surveyor.*

Editorial Material

All articles, reports, letters and contributions are accepted and will be considered for publication regardless of the author's affiliation with the California Land Surveyors Association. Material should be sent to *The California Surveyor.*

Unless indicated, all articles in this publication are prepared by the editor.

EDITOR: **J. E. Terry, L.S.I.T.**
c/o Lisa Reese
312 Carrillo
Santa Rosa, CA 95401

Cover Photo

C. W. Cook licensed surveyor office located at 827 West Exposition Blvd., Los Angeles, California. This location is now part of the U.S.C. campus. Photo taken about 1919.

DEADLINE DATES FOR THE CALIFORNIA SURVEYOR

Winter ..... **December 15, 1984**
Spring ..... **March 15, 1985**

Articles, Reports, Letters, etc., received after the above mentioned date will be placed in the next edition.

President's Message

PRESIDENT'S MESSAGE

Where Do We Go From Here?

Another year has almost passed and there have been some changes in CLSA.

With our new legislative advocate, Winner Wagner & Assoc., a very positive and professional change, we worked with other professional associations in the Record of Survey legislation that has now been signed by the Governor.

We have established liaison between the President of CLSA with the President of Cal Council for Civil Engineers and Land Surveyors. Liaison that is attached to the respective offices and not to the individuals.

We have recognized that over 80% of our membership is from the private practice segment of professional land surveying.

We have established a state wide Professional Practice Review Committee. A structure that where private practitioners have a problem or concern and are at an impasse with local agencies, and after verification by the Committee, will not have to stand alone to be heard.

I am sure there is more CLSA should be doing for the professional surveyors in private practice. You should let us know of your concerns and needs. Towards that end, we have established a committee to develop a program of supporting and being responsive to the needs of those in private practice.

We have established a "newsletter" and while yet not covering all needs, it is a beginning.

We have initiated the involvement of "all" the elected officers in the administrative and other important decisions that do not have the luxury of waiting for the next Board of Directors meeting. We have also proposed a rotating Nominating Committee where three Board members each serve a three year staggered term with one member per year being replaced. One can only be Chairman one of the three years and, once coming off the Nominating Committee, cannot go back for three years. Such a procedure ensures the membership at large that CLSA is responsive to all the members.

This year CLSA is enjoying a new office for headquarters in Santa Rosa and by the time you read this, a computer which will greatly increase our administrative abilities. At years end, we will have a surplus in our budget.

But what about tomorrow? To continue to improve the effectiveness of CLSA it will take involvement and commitment from all of us. We still have much more to do. We are concerned with local communities not perpetuating monuments. We are concerned with CalTrans refusing to let us occupy monuments that are in State Highways (not freeways). We are concerned with local ordinances that interface with surveying that are often written by non professionals and often violate state law.

And finally we should be concerned with ourselves. Earlier, we proposed a program that would encourage each of us to continue education, to increase our peripheral knowledge, and to broaden our horizons. The Board of Directors voted it down.

It is like the story where on February 2nd of each year the ground hog comes out of his hole. If he sees his own shadow, he is frightened and runs back in his hole and hides from the world. Tradition tells us winter will last longer. Yet, on February 2nd, 1848, the Treaty of Guadeloupe Hidalgo also was signed wherein all existing valid Spanish Ranchos were to be surveyed. Today, those surveys are the basis of many land titles and a source of much of our work.

While other professions refine and are responsive to our ever increasing and technically expanding society in which we live, by meeting those needs they also expand themselves.

If we run back in our holes and hide, the world will still continue with or without us. To be responsive we must be aggressive and take the role of our own leadership, initiate our own programs instead of being in a reactionary role to the program of others.

The future is ours. The decision is ours. If we don't act, don't get involved, others will. Then neither the future nor decisions are any longer ours. Not taken, but given away due to our apathy. The results in our future, my friends, are yours.

James R. Dorsey
President

JAMES R. DORSEY
President
California Land Surveyors Association

PHOTOS WANTED

The California Surveyor is requesting cover photos from its readership. Photos should be 8"x10" glossy-for-repro. Information regarding the subject of the photo plus the photographer/contributor should be sent to the Editor along with the photo and a letter giving The California Surveyor permission to publish the material.

C.L.S.A. DECALS AVAILABLE

2 for $1.00
(minimum order)

CLSA decals can be obtained from: CLSA Central Office,
P.O. Box 9098,
Santa Rosa, CA 95405

These decals can be used on windows, windshields or any other location in which you wish to indicate your membership in the California Land Surveyors Association.

Articles

THE OFFICE OF THE STATE SURVEYOR GENERAL

(A Few Biographical Notes)
WILLIAM M. EDDY
Second State Surveyor General
Term of Office: 1852-1854

William Matson Eddy was born in he year 1818, a native of the State of New York. He arrived in San Francisco in 1849 and promptly estabilised himself as a surveyor. He was appointed the City Surveyor and, in August of 1849, was ordered by the Mayor, J.W. Geary, to survey additional lands in San Francisco because the supply of existing lots was rapidly being exhausted.

During his tenure as City Surveyor, Mr. Eddy married Harriet Ecker of Ithica, New York. She arrived in San Francisco May 20, 1850, on the passenger ship Oregon, and became Mrs. Eddy before the day was out. In order to prepare for his bride, William Eddy had imported a small house in sections from New York, and had it built on Mission Street, between Third and Fourth Streets.

Eddy had lobbied for the State Surveyor General's position during the first session, in 1849, in competition with Charles J. Whiting. The latter was successful and held the job for two years. Eddy's second bid for the Surveyor General's office met with voter approval, and he assumed his duties on January 5, 1852.

As with his predecessor (and for much the same reason) Eddy did not produce much work. He published an official map of the State in 1853, and dutifully wrote his reports to the State Legislature. In other respects, the State Surveyor General's office, during his management, was plagued with uncooperative county assessors, inadequate budget, chaotic land titles and confusing land law.

William M. Eddy was praised by some and censured by others. His assistant, Milo Hoadly, was highly critical of Eddy's work and thought him to be without principle. Others state that Eddy gambled and drank too much. It is known, on the other hand, that Eddy was one of the founders of Trinity Church located in San Francisco, and that he was well received in professional and social circles.

Prior to entering State duties, Eddy was very active while with the City of San Francisco. He laid out many subdivisions and city streets, and named the latter for prominent individuals. An amusing incident about the McAllister family in San Francisco (according to the California Historical Society Quarterly) illustrates one method that Eddy employed in selecting such names:

When William M. Eddy, the City Surveyor, was extending the map of Jasper O'Farrell in 1852, he met Hall McAllister by chance one day about noon. Said Eddy:

"Hello, Hall. Buy me a lunch and I'll do something for you.'

"Yes?" replied the lawyer cautiously.

"I have a short street without a name. It runs from Market only as far as Larkin. Buy the lunch and your name goes on it."

Our McAllister Street is a continuing witness to the verity of this anecdote.

William M. Eddy was succeeded as State Surveyor General by S.H. Marlette who assumed office on January 2, 1854. Eddy died shortly thereafter, on March 9, 1854, and was buried the next day in Grave No. 3297, Yerba Buena Cemetery. His obituary does not state that he left issue. His surviving spouse later married J.D. Hawks who died in 1869. Harriet Ecker Eddy Hawks subsequently died in 1892. The Alta California reported that William Eddy "was universally known in the City and his death will be lamented by a large circle of friends".

—Herb Maricle

This series originally appeared in various editions of "California Landword," a monthly newsletter for the employees of the California State Lands Commission.

Herb Maricle is an associate land agent for the commission with a flair and interest for geneological research.

This is the second paper of the ongoing series.

SURVEYORS GENERAL FOR CALIFORNIA 1849 to 1929

NAME	ASSUMED OFFICE
Whiting, Charles J.	Dec. 22, 1849
Eddy, William M.	Jan. 5, 1852
Marlette, Seneca H.	Jan. 2, 1854
Brewster, John A.	Jan. 7, 1856
Higley, Horace A.	Jan. 4, 1858
Houghton, James F.	Jan. 6, 1862
Bost, John W.	Dec. 2, 1867
Gardner, Robert	Dec. 4, 1871
Minis, William	Dec. 6, 1875
Shanklin, James W.	Jan. 5, 1880
Willey, Henry I.	Jan. 8, 1883
Reichert, Theodore	Jan. 3, 1887
Wright, Martin J.	Jan. 7, 1895
Woods, Victory H.	Jan. 5, 1903
Kingsbury, W. S.	Jan. 7, 1907
Office Abolished —	August 14, 1929

BE YOUR OWN "SURVEYOR"

by John Wilhelm

As with a million other homeowners you have a problem with your neighbor. Joe LeTrespass has been mowing a movable line on his side until one day his mower will shear the paint off your house. Where is the property line between your ownerships?

You call a surveyor. You wince at his price. Then you speak with Joe about sharing the cost of a survey.

"No, thanks," says Joe; "I know where my line is."

Your wife begins nagging. While you stall, she becomes shrill, proclaiming her need of a fence to contain little Alphonse, Jr. Prices of surveys and fences being what they are, you can have one of these but not the other. So you decide to become your own surveyor.

At the library, you look for a "How To Survey" book. There doesn't seem to be any for the layman, although you are spellbound by a survey book entitled, *Surveys in Frontal Lobotomy*, showing just where the axe was lodged.

The librarian takes you to the locked case where you discover *The Surveyor*, by Aaron Rathborne. It was written in 1650, and you read in part:

...the multitude of simple persons who have once observed a surveyour, by looking over his shoulderr, presently apprehend the business and within small time after, you shall hear them tell you wonders and what rare feats they can perform; yea, and they will undertake (or I will for them) that for ten groats a day they shall be able to undoe any man that deale with...

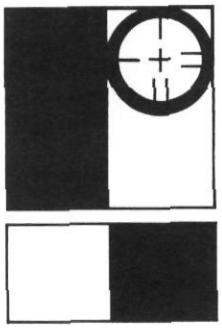
Rathborne speaks about an instrument called a "plaine-table" being used in those times. It seems to have all the accuracy of Joe's lawnmower; so you search on and discover a passage from Cassiodorous, circa 540 A.D. He says: *You should at first fancy the surveyour a madman when you see him walking the most devious paths. But he walks not as other men walk. His path is the book from which he reads; he shows what he is saying; he proves what he hath learned. By his steps he divides the rights of hostile claimants...* (that's you and Joe)*...and like a mighty river...* (that's Joe's lawnmower)*...he claims the fields of one side and deposits them on the other.*

You leave the library muttering, "ten groats a day," and "like a mighty river," but you have found no solution to your problem.

Now you shall bear up, not faltering on the paths of Cassiodorous. It is my uncounted years in surveying that shall come to your aid.

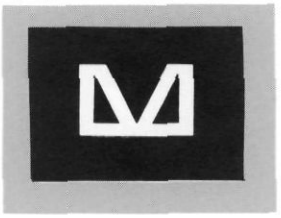
(Continued on page 6)

LANGHAM INSTRUMENTS, INC. IS PLEASED TO ANNOUNCE THE PURCHASE OF MATHIS INSTRUMENT COMPANY



LANGHAM INSTRUMENTS, INC.
45333 FREMONT BLVD. #6
FREMONT, CA. 94538
(415) 490-8956

Specialists in Hewlett-Packard Civil Engineering service, sales, and rentals. Our history of unsurpassed service in this area has been expanded to include the sale, service, and rental of many of the major manufacturers of fine surveying, engineering, and construction instruments and supplies available on the market today. In addition to the expansion of our product line, we have moved to a larger, more modern facility in order to provide you with better and faster service than ever before. We have acquired the services of a new employee fully qualified to answer any of your questions concerning our new products. We are pleased to announce the addition of Georgia Simonds as our new Sales Manager as of July 1, 1984. Georgia has spent a number of years in the industry with Brunson Instrument Co. as a Sales Manager in their Denver office and as the Office Manager in their recently sold San Jose office.



MATHIS INSTRUMENT CO.
1516 NORTH FOURTH ST.
SAN JOSE, CA. 95112
(408) 286-0568

The Southbay's longest established business dedicated to the premise of service to the customer and their needs. Founded in the early 1960's by Mr. Vern Mathis, the company has enjoyed a long-lasting relationship with their customers in the sale, service, and rental of equipment and supplies to both small and large companies. It is the intention of Mr. Lonnie Mathis, a long-standing employee of Mathis Instrument Co., now designated General Manager of the company, to uphold and maintain Vern's standard of care and excellence that you have come to know and trust. Vern Mathis will be semi-retired for a time, but, available to us in a consulting capacity so that we will be able to draw on his knowledge in our service to you. Vern had been with Boeing in the optical tooling division and with Kuker Rankin prior to founding Mathis Instrument Co. It is with great pleasure that we welcome them both to the growing firm of Langham Instruments, Inc.

Feel free to call on us or stop by either office, if just to see our new facility and to meet our new people. Take advantage of our 65 years of combined service to the industry for the growth and future of your company.

AUTHORIZED DISTRIBUTORS AND REPAIR FACILITY FOR

HEWLETT-PACKARD
LIETZ
TOPCON
PENTAX
KERN
ZEISS
LASER ALIGNMENT
CLS INDUSTRIES

SALES IN USED HEWLETT-PACKARD COMPUTERS & ACCESSORIES

FIELD SUPPLIES

AINSWORTH GEODETIC, LUFKIN, AERVOE, PACIFIC, ROLATAPE, KUKER RANKIN, CHARVOZ CARSEN, DRAFTING SUPPLIES, RABONE CHESTERMAN, LATH, STAKES, & HUBS, FLAGGING, STAKE, ROD, & TRIPOD BAGS, KESON, BRUNTON

SERVICE

ALL COMMONLY RECOGNIZED MANUFACTURERS OF INSTRUMENTS AND FIELD SUPPLIES

RENTALS

EDM's, TOTAL STATIONS THEODOLITES, TRANSITS, AUTO LEVEL, LEVELS, T-LEVELS, LASERS, CHAINS & ACCESSORIES.

What shall we do first? Although it becomes my craven impulse to have you *re-read Rathborne and then sell the* problem with the house — No, let us push on, you and I.

Consider first: When can you *not* attempt resurveying your property?
Exception A. When your lot is within an *old subdivision. Here the corner pipes* you wish to find have been eaten by gophers and rampant bulldozers.
Exception B. When your deed recites a "metes and bounds" description. In this case, you will need bus fare, because the description starts 16 blocks away.
Exception C. When there is a curved line bounding any part of your lot. Except in this exception, the eventuality that you decide to calculate a proper number of chords and their deflections based upon the half-deltas of the sustended arcs.

Exception D. When Joe's bulldog, Butcher, stands astride the path of Cassiodorous — your lot line.

But when, you ask, *can* I resurvey my lot? Only under one of the following two conditions:
Condition A. When you have passed the state exam in this discipline.
Condition B. When your lot is a simple rectangle - in a recent subdivision — possessing aligned curb or sidewalk - situated not on a mountainside — unencumbered by trees and fences.

If you have met all the above requirements, we next proceed to the investigatory phase of the survey.
A. Find the legal description of your land. This will not be your payment book, though it will recite your legal debt; nor will it be the legal recitation that the bank owns bedrooms, bath, kitchen, roof. (You own the soapdishes and any oil on the garage floor.)
B. Take the proper legal description to the clerk at the office of the City Engineer. Ask him for the official map of your subdivision. He will answer with umbrage (the state of his marriage) or with just plain guff (the swelling of his spleen). Heed him not, except to remind him that Washington, Jefferson, and Lincoln all became Presidents by virtue of first being surveyors.
C. Map in hand, find the nearby office of the Lord-Surveyor. If he bears a resemblance to Abe, Tom, or George, as above, proceed to D.
D. Ask Abe if your lot is a simple rectangle in a recent subdivision and otherwise conforming to condition B, herein. Having obtained affirmatives, you are now confirmed in your resolution and ready to stand tall even among Presidents.

Since we can admit to some successes thus far, we must next consider the tools *you will employ. Follow this list carefully.*
A. One shovel - the wifely size. Measure for fit.
B. Fifty-foot steel tape. (No yard sticks or cloth sewing tapes.)
C. A dozen spikes - 20 d or better.
D. Sixty feet of chord - six for a plummet, 54 to engage little Alphonse, Jr. — preferably around the feet.
E. One hambone for Butcher.
F. A rock the size of a chipmunk's head. If the day is windy, the size of Butcher's hambone.

You are now ready to proceed with your survey.
Step One: Approach the front line of your property. Find the corner pipe by digging in all likely locations.
Step Two: Have your wife hold zero end of tape on pipe. (Note: If pipe has not been found yet, insist that she keep on digging.)
Step Three: From the found pipe, measure eight feet parallel to street line. Insert spike. Admonish little Alphonse, Jr. not to touch spike.
Step Four: With tape end still on pipe, move along your property line six feet, placing two spikes on a short arc at that distance.
Step Five: Intersect this arc with a distance of ten feet from the spike set at *eight feet, as in Step Three. (Note: it is* absolutely normal to the proceedings that last named spike will be in frantic clutch of little Alphonse, Jr. If so, return to Step Three before completing Step Five.)

You have now obtained a 90 degree angle, vindicating Pythagoras, who stated in simple terms: *The sum of the squares of the sides of a right-triangle is equal to the square of the Hypotenuse,* (both Pythagoras and Hypotenuse being ancient Greek gentlemen, as you will remember). We now advance to Step Six.
Step Six: Tie your chord to the rock, creating a plumb line — a tool much used by Cheops, surveyors, and gravediggers, in descending order.
Step Seven: Send your wife (with hambone and shovel at ready) uphill to near the rear property line. "Shovel at ready" simply means that she will neither trip over it nor lose it.
Step Eight: Squat down several feet behind the corner pipe, suspend plummet over pipe, and align eye with right-angled spike. Remove little Alphonse, Jr. from lap.
Step Nine: Move wife onto projection of this line by voice or by wave. At point thus obtained, she *must* leave shovel erect to denote line-of-sight.
Step Ten: Again stand wife over front pipe, tape in hand. If she must first put *down shovel (somewhat normal unde* these conditions), repeat Step Seven, sending wife to top of hill with shovel, and Steps Eight, Nine, and Ten.

You are now ready to measure the length of your property line and find the rear corner thereof.
Step Eleven: Measure off the first fifty feet. Insert spike.
Step Twelve; Reclaim shovel from little pill Alphonse, Jr. and repeat Step Seven, sending wife to top of hill with shovel.

In the event that it is now near lunch time, sustain yourself with two martinis, giving Joe LeTrespass opportunity to recover the shovel you borrowed. When that happens, look in the phone book under "SURVEYOURS".

HYDROGRAPHIC SURVEYS

Certification as a hydographic surveyor is official recognition by ACSM that a person has demonstrated to the satisfaction of a Certification Board that he or she is minimally competent to conduct hydrographic surveys in one of two specialty areas. Certification is voluntary, and it does not substitute for professional registration which is a legal act by the several states.

DEFINITION OF HYDROGRAPHIC SURVEYS

ACSM defines hydrographic surveying rather narrowly. The certification program was developed to recognize those surveyors who perform surveys on the water as opposed to surveyors who (for example) survey water boundaries.

ACSM, in general, uses the definition given in the Department of Defense *Glossary of Mapping, Charting and Geodetic Terms,* i.e.:

A survey made in relation to any considerable body of water, such as a bay, harbor, lake, or river for the purposes of determination of channel depths for navigation, location of rocks, sand bars, lights, and buoys; and in the case of rivers, made for flood control, power development, navigation, water supply, and water storage.

An amplification of this definition could also state that: The preponderance of hydrographic surveys are made from a vessel of some type as opposed those surveys conducted on shore or by wading into shallow water. The exact purpose of a hydrographic survey i not important. The critical factor is that the survey be an accurate survey that is conducted according to some specified standards.

The two critical measurements that should be present in any hydrographic survey are position and depth. Both measurements should be made in an exacting and correct manner to give a true representation of the physical condition of the water body.

Surveys that are ancillary to and (alone) are NOT primarily hydrographic surveys are gravity surveys, magnetic surveys, seismic surveys, tidal and tidal current surveys, shoreline surveys and biological surveys. These surveys combined with position and depth determination would be considered to be hydrographic surveys.

ELIGIBILITY

The ASCM Hydrographic Surveyor Certification Program is open to all persons. To become certified, a person need not be a member of ACSM.

AREAS OF CERTIFICATION

There are two area of certification: *Inshore Certified Hydrographic Surveyor and Offshore Certified Hydrographic Surveyor.* The person can be certified in one area or the other or both. To be certified in both, a person must apply for and receive separate certification in each.

The division between Inshore and Offshore certification is based, primarily, upon the surveying techniques and equipment with which the individual has experience. Inshore certification is based on plane surveying techniques where the survey is less than 25 miles from the shore control and the survey area encompasses limited areas (i.e., less than 100 square miles).

Offshore certificaiton is based on geodetic surveying techniques where the survey area is greater than 25 miles from the shore control regardless of distance offshore, or when the survey area encompasses larger areas. This category will also include other scientific and oceanographic surveys in which obsolute geographic accuracy is not required but relative accuracy is required. Relative accuracy is defined as the ability to return to a previously occupied position referenced by electronic positioning system rates, radio wave transit times, or some other equally acceptable method.

REQUIREMENTS FOR CERTIFICATION

There are two possible routes to certification in either area: *examination* and *direct certification.* In either case, an applicant must demonstrate to the satisfaction of the Hydrographic Surveyor Certification Board that he or she has the necessary knowledge to perform hydrographic surveys and the ability to apply that knowledge. Each applicant must also agree to comply with the ACSM Code of Ethics for Surveyors and Mapping Scientists.

For further information on requirements, fees and application procedures, contact the ACSM-ASP Education Program.

—ACSM News, Jan. 1984

□

A TRAILBLAZER TO TRUST

by Allan Nilson

It is almost axiomatic that we as surveyors feel compelled to make disparaging remarks about the quality of the work of our predecessors. This seems to be particularly true when the subject is retracement of a portion of our rectangular survey system.

Perhaps, rather than dwelling on deficiencies, it would be desirable to recognize one of the original surveyors who appears to have had the dedication and perseverance to actually set most of the corners appearing in his notes. This man was Col. S.W. Brunt, a contract surveyor for the U.S. Government. If one looks at status maps reflecting found Government corners it is readily apparent that Brunt set a far higher percent of the corners in his project areas than did his comtemporaries.

Most of the other original surveyors that worked in northwestern California were apparently not as conscientious. For some, corners can be found only on every other line, for others the pattern was to traverse ridges and trails, setting only the corners located near these features, while others seemed to concentrate their efforts on the open ground or areas of moderate topography. Then there were those who didn't set any corners, or at least they haven't been found.

Not so with Brunt. Nearly every corner he reported setting can be found, and this was in spite of his crossing some formidable terrain to reach the appropriate position. My own experience in the north coast area over the past 28 years is that some of the sections surveyed by Brunt are the only ones in which all eight corners of a section reportedly set originally, can be found and used for dimensioning and subdividing the section.

This is not to say his work was without error, because corner positions are often not as reported. As an example, found eastwest quarter corners of a retraced sectionwere nearly record bearing and distance from original corners on the east side of the section but were as much as 700 feet in latitude south of the original corners on the west side. However, it is still gratifying to feel with assurance that one is "following in the footsteps" of the original surveyor.

All this was in spite of the fact that Brunt had some association with the infamous J.A. Benson. In 1875 they jointly contracted to survey a portion of the Humboldt Baseline and some nearby township lines. Brunt, apparently as an individual contractor, did good work in the same area in 1879. Either Brunt resisted the influence of Benson, or Benson had not yet adopted the modes of operation his syndicate was later to utilize.

Col. Brunt apparently covered quite an area and time span during his career. Approved plats would indicate that he was in western Trinity County in 1875 and also at least in 1879. References to him in *Surveys and Surveyors of the Public Domain 1785-1975* indicate that he had done work on the California-Mexico border in 1878, and in Wyoming is 1904 and 1905. In the reference cited above, a statement by Frank Johnson, long a Supervisor of Surveys for the Government Land Office, perhaps describes Brunt's feeling for the profession. Johnson wrote to a colleague: "By the way, I heard the other day that old man Brunt is hale and hearty, and hoping that some day he will get back on the work. It seems to me he must be about 90 years of age at this time."

Approximately eight years ago the Forest Service instituted a program to define their boundaries by the first decades of the twenty-first century. The commitment of sufficient resources to retrace several hundred miles of survey lines each year on the local national forest alone, has revived interest in, and generated discussion of the credibility of the original surveyors. Much of this work will be in areas where there is a high probability of fraud being associated with the original survey. However, at the conclusion of this work, it will almost certainly be Col. S.W. Brunt who left the best set of footprints to follow. □

COLUMBUS REDISCOVERED

"Christopher Columbus may have something in common with the Washington politician. He left not knowing where he as going; upon arriving did not know where he was; he returned not knowing where he had been, and he did it all on borrowed money."

—Clyde H. Farnsworth,
in the New York Times
—from the Evergreen Surveyor,
Feb. 1984

□

(Continued on page 20)

Insurance Corner

EVERYTHING YOU WANTED TO KNOW ABOUT INSURANCE BUT HAVEN'T ASKED!

by Michele Barreras
Special Agent GREGG & ASSOCIATES

The importance of appropriate insurance coverage cannot be too highly stressed. Inadequate coverage can be disastrous and even "fatal" to a business or individual involved in a severe loss. Your insurance coverage is financial protection for your business. Your insurance agent's job is to help you be aware of additional coverages or increases in limits that you may need. In doing this, there are certain pieces of information that he needs. Some of these are payroll, gross receipts, prior loss history and current and previous premiums paid. Agents often find people reluctant to provide this information. People may feel that it is none of the agent's business or that the information will somehow get in the hands of their competition. All information given to an agent is confidential and proprietary. It is only to your advantage to be open with him. If you have a loss problem, your agent should be able to work with you to reduce your losses and thus your premiums. In this and future articles, we hope to clarify some of the mysteries of why this information is so important, and also explain some of the terms and coverages that you may hear with regard to insurance.

There are basically four types of property coverages:

1) Buildings (Real Property)
2) Contents (Personal Property)
3) Business Interruption
4) Inland Marine & Floaters

1) If you own the building you operate your business in, or if your lease requires it, you will need to insure your building. Be aware that due to rising inflation, the amount of insurance you need may be higher than you think. Neither the purchase price nor the amount of the mortgage (if any) indicates the amount of insurance you need. The formula used to determine the actual cash value is REPLACEMENT COST LESS DEPRECIATION. Most companies estimate this by multiplying the square footage by a factor determined by the type of construction, age and occupancy of the building. Take a moment to consider how much it would cost to replace your building?

2) Contents—You also have the option to insure your personal property (furniture, fixtures, drafting equipment, etc.) for actual cash value or replacement cost. Consider how much it would cost to replace all of your business personal property.

3) Business Interruption—Due to the number and complexity of the different forms of these coverages, we will only touch on the one most useful for land surveyors.

a) Extra Expense—Covers the additional expense of keeping your business operating in the event of a loss. This means the expenses over and above your normal operating cost. EX: You have to rent another location but still have to pay rent at the damaged location as well. The rental cost for the additional location would be an "extra expense".

The amount of insurance is subject to a percentage limitation based on the amount of time needed: 40% if the period of restoration is not in excess of one month, 80% if the period of restoration is more than one month but not in excess of two months, 100% if the period of restoration is in excess of two months.

4) Inland Marine & Floaters—the most common of these coverages are Accounts Receivable, Valuable Papers and Miscellaneous Equipment Floaters.

a) Accounts Receivable—Coverage for accounts receivable is normally excluded from the personal property coverage. This insurance would pay for "all sums due the insured from customers, provided the insured is unable to effect collection. . .as the direct result of loss or damage to records of accounts receivable".

b) Valuable Papers—Covers such items as written documents, books, maps, film, plat drawings, abstracts, deeds, mortgages and manuscripts for the actual cash value of the items.

c) Floaters—Provide coverage for items not always contained at one location, items that are "floating" from one place to another. Such as surveyors equipment (theodolites, tripods, etc.) This coverage is necessary since most personal property forms cover only that property on the designated premises or within 100 feet of the designated premises.

In all of the above coverages, regardless of the amount of the loss, you would still not receive any more than the amount of insurance, subject to any coinsurance clause if applicable (see column in next issue for a discussion of the often misunderstood coinsurance clause). Please understand that generaly when an agent suggests an additional coverage, it is not because he is greedy for more money. He is probably only interested in providing you with the best possible coverage. These coverages can mean the difference between financial security and financial disaster. □

LEWIS & LEWIS

surveying equipment

• RENTALS •

CALL TOLL FREE
(800) 235-3377
(all contiguous states except Calif.)
(800) 342-3607
(in California)

	Per day rates. 1-10 days	11-90	91+ (or 30 day minimum)
NEW Lietz DT20E 20" Electronic theodolite	20.00	12.00	8.00
NEW Lietz RED-2A EDM w/slope reduction (LCD display)	32.00	19.20	12.80
NEW Lietz RED-2L EDM w/slope reduction (4 mile range)	35.00	21.00	14.00
ELECTRONIC DISTANCE METERS			
Lietz SDM3ER semi-total station w/vert. sensor	65.00	39.00	26.00
SDM3E semi-total station (one mile range)	45.00	27.00	18.00
RED-3 EDM with vertical sensor (3 mile range)	45.00	27.00	18.00
RED-2 EDM with slope reduction (2 mile range)	32.00	19.20	12.80
RED-1 or 1A EDM (1½ mile range)	30.00	18.00	12.00
Nikon NTD-4 semi-total station (one mile range)	45.00	27.00	18.00
ND-21 EDM with slope reduction (one mile range)	25.00	15.00	10.00
ND-31 EDM with slope reduction (two mile range)	32.00	19.20	12.80
Kern DM-503 distance meter (5 kilo. range)	50.00	30.00	20.00
AGA Geodimeter 120 EDM with vert. sensor (2 mile)	45.00	27.00	18.00
model 122 EDM with vert. sensor (3 mile)	60.00	36.00	24.00
Hewlett-Packard 3808A EDM (6 mile range to 9 prisms)	50.00	30.00	20.00
THEODOLITES			
Kern DKM-2AT one second theodolite	35.00	21.00	14.00
K1-MT six second theodolite	25.00	15.00	10.00
K1-ST thirty second theodolite	25.00	15.00	10.00
Lietz TM-1A one second theodolite	30.00	18.00	12.00
TM-6 six second theodolite	25.00	15.00	10.00
TM-10E ten second theodolite	22.00	13.20	8.80
TM-20H or TM-20C twenty second theodolite	20.00	12.00	8.00
TS-6 or T-60D one minute theodolite	20.00	12.00	8.00
Nikon NT-4D six second theodolite	25.00	15.00	10.00
NT-2D twenty second theodolite	20.00	12.00	8.00
NT-2S one minute theodolite	20.00	12.00	8.00
TRANSITS			
Lietz BT-20 or Nikon TT-800 twenty second transit	10.00	6.00	4.00
Nikon TT-400 one minute utility transit	7.00	4.20	2.80
BD-7F five minute utility transit	6.00	3.60	2.40
David White 8300 construction level-transit	5.00	3.00	2.00
LEVELS			
Zeiss Ni-2 engineers 32X, 2nd order automatic level	12.00	7.20	4.80
Nikon AS or Lietz B-1 32X, 2nd order automatic level	10.00	6.00	4.00
Nikon AE-5 or Lietz B-2A 30X, engineers automatic level	7.00	4.20	2.80
Nikon AP-5 or C-3A 26X automatic level	6.00	3.60	2.40
Nikon AZ-1 or AZ-1S 22X construction automatic level	5.00	3.00	2.00
David White 8114 construction 12" dumpy level	3.00	1.80	1.20
FATHOMETER			
Raytheon DE-719B recording fathometer	25.00	15.00	10.00
CONSTRUCTION LASERS			
Spectra-Physics EL-1 electronic level	30.00	18.00	12.00
942 laser level, vertical/horizontal	40.00	24.00	16.00
611 align. laser w/20 sec. transit	15.00	9.00	6.00
LT-3 alignment laser	20.00	12.00	8.00
COMPUTER SYSTEMS			
Hewlett-Packard computers — HP-85B, HP-86B, HP-87XM Disc drives, Printers, and Plotters.	Call for individual equipment and systems rates.		
Lewis and Lewis Surveying software			

★ MOST ALL OF THE EQUIPMENT YOU SEE ON OUR RENTAL RATE SHEET, IS ALSO AVAILABLE FOR PURCHASE, **NEW OR USED.**
★ RENT WITH PURCHASE OPTION. We will apply 70% of the rent you pay towards the purchase price of the equipment, up to 80% of the value of the equipment.
★ CALL TODAY — WE'LL HAVE IT TO YOU TOMORROW.

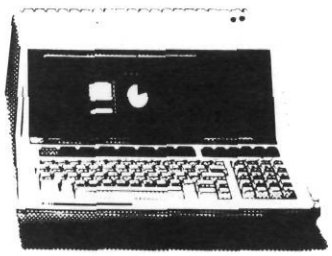
1600 Callens Rd. — P.O. Box 820 — Ventura, CA 93002 — (805) 644-7405

THE PROVEN COMBINATION

HEWLETT-PACKARD

HP-86B

HP-85B



HP-87XM

LEWIS & LEWIS SURVEYING SOFTWARE

—PROFESSIONAL SOLUTIONS AT AFFORDABLE PRICES
—SATISFACTION GUARANTEED — FREE TRIAL PERIOD
—LEASE / PURCHASE, RENTAL AND FINANCING AVAILABLE

- ★ Comprehensive 3-D Coordinate Geometry
- ★ Subdivision Design Enhancements
- ★ Point Plotting on Dot Matrix Printers To Any Scale
- ★ Unique Trig Traverse with State Plane/UTM Coordinate Option
- ★ State Plane/UTM Coordinate Conversions
- ★ Easy To Use Text Editor
- ★ Sunshot - Hour Angle and Altitude Methods - No Ephemeris or Updates Required
- ★ Fully Annotated Computer Aided Map Drawing
- ★ Realistic Data Collector Capabilities

★ ★

★ NO MEMORY MODULES REQUIRED FOR HP-86B or HP-87XM ★

★ ★

PLUS A CONTINUING UPDATE PROGRAM FOR
ADDITIONS AND MODIFICATIONS THAT INVITES YOUR PARTICIPATION

WE WELCOME YOUR IDEAS AND CRITIQUE — YOUR SOFTWARE WILL NEVER BE OBSOLETE

Our Software is configured to allow you to get what you want now and add additional capabilities later, as you need them — at prices that make sense!

If you want powerful, flexible software that's straight forward, easy to learn and use — plus complete error trapping and the capability to insert, correct and delete without re-entering all the data — you owe it to yourself to take a hard look at Lewis & Lewis Surveying Software.

Write or call one of our toll free numbers now for complete information.

We think you will be glad you did!

MasterCard VISA

TOLL FREE (800) 342-3607 CALIFORNIA (800) 235-3377 OUTSIDE CALIFORNIA

HEWLETT PACKARD PERSONAL COMPUTATION DEALER

LEWIS & LEWIS SURVEYING EQUIPMENT

1600 CALLENS ROAD • VENTURA, CA 93003
(805) 644-7405 • ALASKA (907) 277-9432 • MON.-SAT. 8-5 • **TELEX 469116**

Of Interest

COFPAES FEDERAL PROGRAMS CONFERENCE SET FOR MARCH 25-27, 1985

Washington, D.C. (July 26)-The Committee on Federal Procurement of Architect/Engineer Services (COFPAES) today announced its 13th Annual Federal Programs Conference will be held March 25-27 at the Loews L'enfant Plaza Hotel in Washington, D.C.

The conference features representatives of major federal agencies involved in the procurement of architect-engineering services from the private sector. Among the participants will be officials from the Department of Defense, including the Air Force, Corps of Engineers and NAVFAC, the Departments of Energy and Transportation, as well as EPA, GSA and the Small Business Administration.

"The federal government is still the largest A/E client in the Nation. The COFPAES conference is the only way to learn firsthand what an architect, engineer or surveying firm needs to know about marketing its services to the federal government," according to William A. Rose, Jr., FAIA, Chairman of COFPAES.

Individuals interested in preliminary information of the 1985 Federal Programs Conference can write COFPAES, c/o ACSM, 210 Little Falls Street, Falls Church, Virginia 22046.

The 1985 conference will be managed by the American Congress on Surveying and Mapping. Other COFPAES members are the American Consulting Engineers Council, The American Institute of Architects, American Society of Civil Engineers, American Road and Transportation Builders Association (Planning and Design Division), and National Society of Professional Engineers. □

This is to inform CLSA that the Bureau of Land Management will be conducting a cadastral survey of Section 8, T. 24 N., R. 10 E., M.D.M.

Robert Zickwolf, Cadastral Surveyor, will begin this survey during this field season.

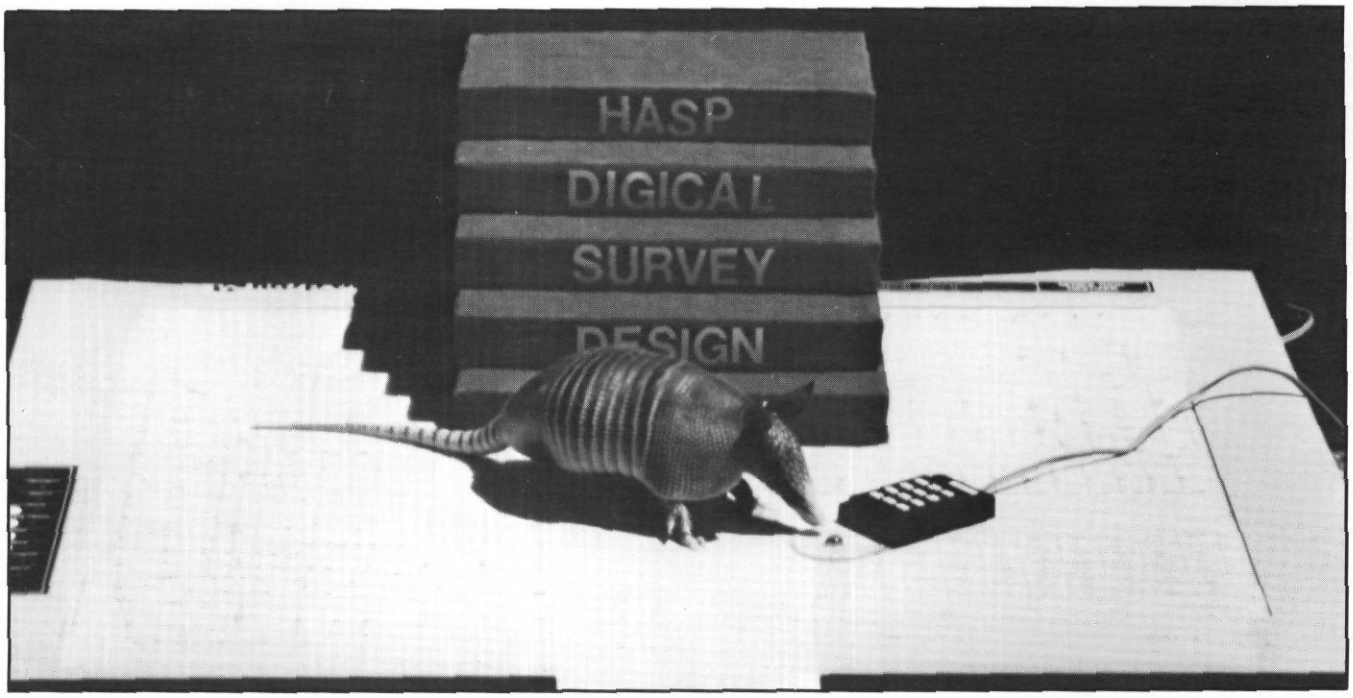
Clifford A. Robinson
Chief, Branch of
Cadastral Survey

RAILROAD TRACK DEFINED AS A "LANDMARK"

The Wisconsin Legislature has enacted a bill defining railroad tracks as "landmarks" subject to requirements of advance notification of removal by its owner and monumentation through survey by the country. The bill, promoted by the Wisconsin Society of Land Surveyors, became necessary due to the increased abandonment of railroad lines in Wisconsin and other Great Lakes states. Railroad lines are frequently used in legal descriptions of lands and their abandonment often jeopardizes those descriptions and makes retracements or adjoining surveys costly and difficult. Railroad interests in the state opposed anoriginal proposal which would have required the party seeking an abandonment to pay the costs of monumenting the right of way. □

CLSA POLITICAL ACTION COMMITTEE
Your voice in the legislature.

Introducing the HASP Armadillo.



We've been using the armadillo for a long time.
We just haven't been calling it an armadillo; until now.
The HASP armadillo is actually a cursor - the commander of much of the HASP DIGICAL System.
So many folks have been asking us if we use a **mouse**, that we thought they'd remember it better if we answered, "No, we use an armadillo!"

Here are just a few things the HASP armadillo can do for you...

- DIGICAL COGO - Faster and better than any we know of on the market!
- Retrieve existing points at a rate of 2500 points per second simply by pointing the armadillo at them!
- All calculations, coordinate, bearing, and distance entry on the digitizer!
- Automatic Point Naming!
- Annotations in the position, size, color, and character set you want!
- Linework in as many different line types as you can imagine! Choose from 8 pen sizes or colors!
- Symbols - as many as you want! Use ours, or generate your own!
- Generate finished (and we mean finished) plats from data collectors - we support most of the present total station data collectors!
- Draw automatic contours from xyz and breakline data!
- Automatic cross sections!
- Calculate volumes, areas, isopacs, and earthwork!
- Much, Much More!

Call us today at HASP and find out what the HASP DIGICAL System can do to increase your productivity and meet your **specific** civil engineering, surveying, and photogrammetric needs.

hasp inc.

HASP DIGICAL - The clear choice of leading professionals!

1411 West Eisenhower Blvd.
Loveland, Colorado 80537
303/669-6900
TELEX 910-930-9027 HASP INC LVLD

SURVEY & GENERAL INSTRUMENT CO. LTD.
FIRCROFT WAY
EDENBRIDGE, KENT TN8 6HA
ENGLAND
(0732) 864111

BUFETE DE PROYECTOS S.A. DE C.V.
FRANCISCO ROJAS
GONZALEZ #142
COL. PRADO ERMITA
MEXICO 13, D.F. MEXICO
(905) 539-0867

COMPAÑIA ELECTRONICA ASOCIADA LTDA
CARRERA 7th No 22-44 OF. 606
BOGOTA, COLUMBIA
SOUTH AMERICA
PHONE 283 2183
TELEX 43448 SETUR CO

Computer News

CHOOSING A SURVEY DATA COLLECTION SYSTEM

by Keith Houseman
Box 474, Cypress, TX 77429

Computer technology is having a dramatic effect on the surveying company. Field surveyors have programmable hand-held calculators and semi-total stations and office surveyors have micro-computers and computer-aided graphic stations at their disposal.

For the purposes of discussion, we will evaluate the most popular data collection systems. These are composed of three parts—data collector, semi-total station, and micro-computer. According to our figures, these are the HP41C/CB/CX, the Topcon GTS-2 semi-total station, and the IBM PC.

The size of the data collector is important. The unit should be hand-held and light-weight. The data collector should withstand an unintentional or accidental drop to the concrete or ground. The unit should also be pocket-size for protection from bad weather or hazardous conditions. Several computers have been lap-size and not suitable for data collection as a result. Another consideration is the qwerty-style keyboard. This will require two hands to efficiently type. You will then need a place to rest the unit while you type—your knee, the tripod, or a structure. This resting place willbe a luxury when you are standing in snow, mud, or a swamp. The need for a qwerty-style keyboards has been replaced by numeric coding of descriptions.

A programmable data collector is an absolute necessity. Although the survey company's policy may be that the field crew should only data collect and not compute, surveyors collect angles and distances in a variety of ways. Some double angles, measure inverted angles, turn sets of angles, or use direction instruments. This has been a downfall of many survey manufacturers' data collectors—only single angle right or azimuths could be measured. If the data collector is programmable, how easy is it to program? Several surveyors have delved into programming an HP41CV, but have been unsure where to start on a programmable data collector that has no sine or cosine key.

How easy is the data collector to use? Training field crews is very expensive considering the cost of labor. If the data collector is too difficult to use, the lost time due to the lack of collected data or erroneous data collected will result in abandoning the data collection system. Some data collectors allow the party chief or recorder to select the pen, the character size, or even the line type for drafting the plat. This type of system has proved too complex and time-consuming for the average party chief. Also the cost of field crews varies from twice to three times the cost of a draftsman. The data collector should prompt the user for all entries. One reason the total stations have not proved as popular as semi-total stations such as the Topcon GTS-2 and an HP41CV has primarily been ease of use and cost. Some total stations have no manual entry mode for cross-section or stadia surveys. An EDM could not measure all trees in a forest or thru buildings. It was too time-consuming to make another instrument set-up when only one tree or one additional building measurement needed to be made. An HP41CV could perform all types of surveys.

Interfacing the data collector to the survey instrument and to the computer are two important electronic links.The interface to the instrument and to the computer will eliminate manual entry errors. Two manufacturers with electronic entry to the HP41CV are AGA and Kern. AGA's interface is well-manufactured and cables connect to the total station at the base of the instrument and thru a rugged RS232-IL interface to the HP41CV. Removing the HP41CV from the interface is simple and communication to the HP41CV is easy. Interfacing has been a downfall of survey equipment manufacturers. Some have supported only one computer and their total station while others have left software interfacing to third party coordinate geometry software vendors. Some claim ability to interface to any computer, but data transfers were only data dumps that were not properly formatted for the reduction to coordinates.

The power supply should be light-weight. Using flashlight batteries is most convenient because new batteries are easy to add. Some data collectors are limited because their power source must be the total station or a recharge from an electrical outlet. The power supply should be near the data collector and not have to be placed on the ground.

The data collector should be able to compute. Although the field crews are directed to collect data only, they should be able to check for closure before returning to the office. Field crews allowed to compute in the field with the HP41CV will find tremendous time-savings. After a radial survey is made to locate existing corners, the following can be computed and laid out: 1) lost property corners, 2) positions to search for lost corners, 3) building corners, 4) and manholes and streets. A data collector system that computes 3-D coordinates has its advantages. Manhole invert elevations can be displayed immediately to verify proper direction of flow. Distances between property corners can be check and additional measurements made to search for double corners if distances do not check.

The storage capacity should be enough for a day's work. Fifty measurements per day will be typical for a survey crew. The data collector should have the capacity for three to five hundred measurements when large topographic or radial surveys are made.

Cost is always a consideration and data collectors are not exempt. The HP41CX with sufficient memory modules costs $475 whereas survey manufacturer's data collectors cost from $2500 to $6000. The HP41CV does not need a total station to perform cross-section and topographic surveys that are made with tape and level. As a result, all survey crews can data collect, not just the crew with a total station.

The following is a program listing for transferring data from the HP41CV to the IBM PC or Macintosh. A similar program will allow data to be transferred to the IBM PC from the HP71B. The following equipment is required: HP41C, HP82183A Extended I/O Module, HP82160A IL Module, HP82164A IL-RS232C Interface, Female to female gender reverser, and HP17255B Cable.

```
10  REM IBM PC PROGRAM
20  CLS:REM CLEAR THE SCREEN
30  PRINT"PRESS ANY KEY TO
    CONTINUE.":REM COMPUTER
    WAITING
40  A$=INKEY$:IF A$="" THEN 40
50  OPEN"COM1:9600,N,8,,CS1000,
    DS,CD" AS #1:REM 9600 BAUD, NO
    PARITY
60  PRINT"PRESS RESET ON IL-
    RS232C INTERFACE"
70  PRINT"MAKE ALL ENTRIES ON
    THE HP41C"
80  PRINT
90  PRINT"PRESS SHIFT, RETURN,
    R/S"
100 PRINT
110 INPUT#1,B$
120 INPUT #1,B$
130 INPUT #1,B$
140 INPUT #1,B$:REM CLEARS THE
    IL-RS232C INTERFACE
150 PRINT"ENTER THE NORTHING"
160 INPUT #1,N$:REM WAITING FOR
    INPUT OF NORTHING ON THE
    HP41
170 PRINT"N=";N$
180 PRINT
190 INPUT#1,E$:REM WAITING FOR
    INPUT OF EASTING ON THE
    HP41
200 PRINT"E=";E$
210 PRINT
220 GOTO 30
01  LBL"HP41"
02  LBL 00
03  AUTOIO      ****FINDING THE
04  "HP82164"   LOCATION OF THE
05  FINDID                HP82164A
```

□

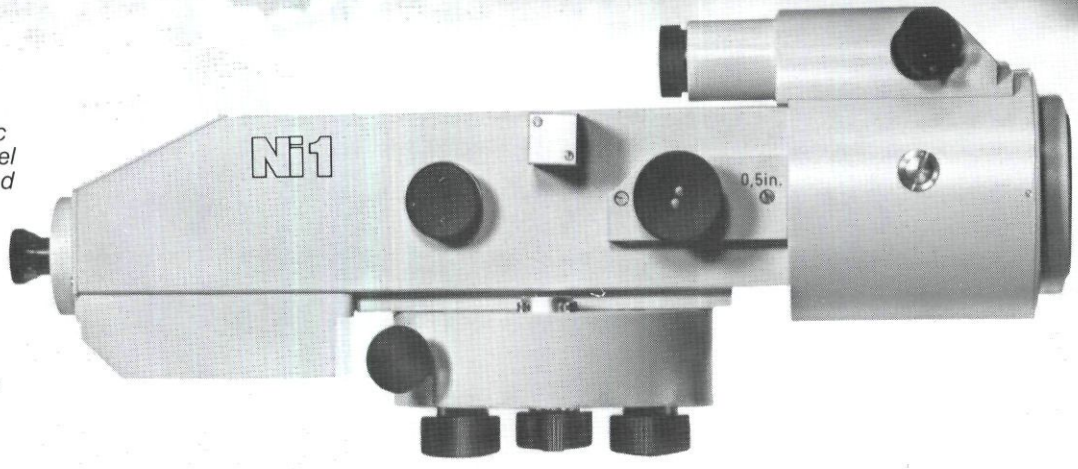
(Continued on page 26)

Surprise!

You know the quality of Zeiss Automatic Levels. Now, check our prices!

Ni1 *Automatic Precision Level with integrated parallel-plate micrometer for first and second order work and optical tooling.*

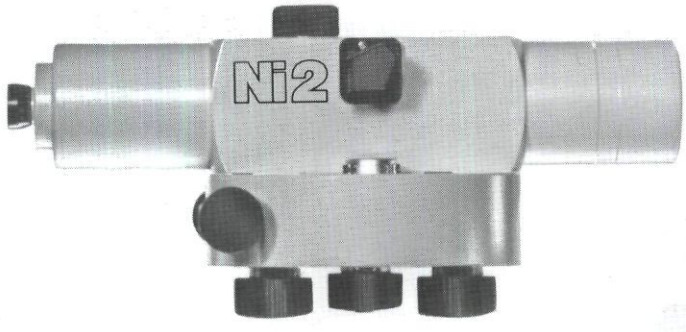
Price: $5165*



Nominal accuracy:
±0.2mm √s(km)
(±0.0008 ft √s(mile))

Ni2 *Automatic Universal Level for surveying and engineering, as well as optical tooling.*
Nominal accuracy:
±0.7mm √s(km)
(±0.003 ft √s(mile))

Price: $1590*



With parallel-plate micrometer:
±0.3mm √s(km)
(±0.001 ft √s(mile))

Ni3 *Automatic Engineer's Level with horizontal circle for surveying, engineering and construction.*
Nominal accuracy:
±1mm √s(km)
(±0.004 ft √s(mile))

Price: $1100*

With parallel-plate micrometer:
±0.7mm √s(km)
(±0.003 ft √s(mile))

Ni4 *Automatic Builder's Level. Sturdy design with shockproof compensator and horizontal circle.*
Nominal accuracy:
±5mm √s(km)
(0.02 ft √s(mile))

Price: $950*

*Suggested list price

For further information contact your local Zeiss Dealer or

Carl Zeiss, Inc.
GEO Division
One Zeiss Drive
Thornwood, NY 10594
(914) 747-1800

ZEISS
West Germany

THE GREAT NAME IN SURVEYING

Surveying Software?

We made it work for you!

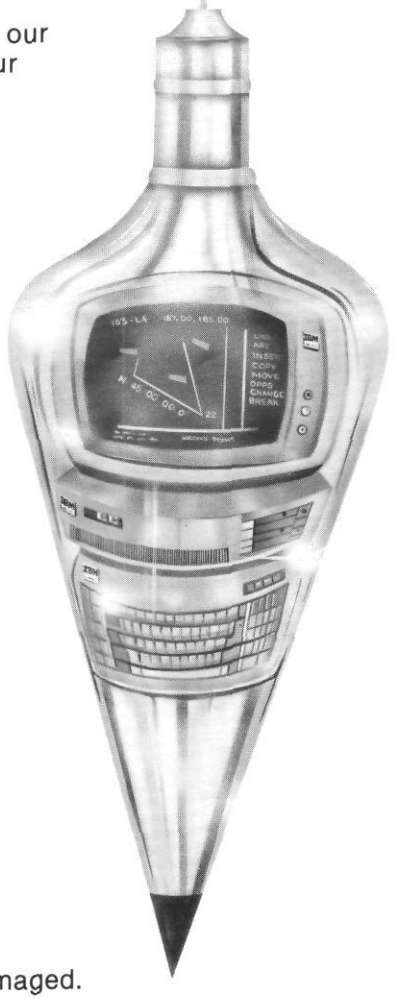
We know for sure it will do the job because we use it every day in our own surveying and engineering firm, Morton Technologies, Inc. Our surveyors and engineers demand programs that are:

- **State-of-the-art**
- **Easy to use**
- **Flexible and dependable**

Programs that don't lock you into one method of surveying, and come with straightforward, easy to follow instruction manuals.

Programs that run on almost every microcomputer on the market.

Our expert programmers at Disco-Tech went to work and the results are:



SURVEY 2000™

LOCATOR—Three dimensional field note reduction with data entry from the keyboard or electronic data collectors.

COGO 2000—Coordinate geometry.

MAP 2000—Area Check.

PLOT 2000—Coordinate plotting on standard computer printers.

Available soon:

DRAFT 2000—CAD system for line plotting.

CONTOUR / TOPO 2000—Contour and topographic mapping.
(DRAFT 2000 and CONTOUR / TOPO 2000 available on 16 bit machines only.)

These programs work for us and they will work for you.
Prove it to yourself with our

$50 DEMO PACKAGE

Fully creditable against a purchase of $150 or when returned undamaged.

PRE AND POST SALE TECHNICAL ASSISTANCE

Most importantly: our engineers and technical support staff are available to answer questions or help with any problems—before purchase, and *after!*

Many other programs available for Structural Engineering, Hydraulics, Energy Conservation, and Architectural Specifications.

Call **707/523-1600, Ext. 614** for demo package, information or complete catalog. Call information for our toll free number outside California.
Or write:
Disco-Tech, a division of
Morton Technologies, Inc.
600 B Street, P.O. Box 1659
Santa Rosa, CA 95402

disco tech®

News Briefs

PROFESSIONAL LAND SURVEYORS OF OREGON 1984 ANNUAL CONFERENCE

The following information is pertinent to our upcoming conference:

1. Subject—1984 PLSO Annual Conference (PLSO's 25th Anniversary)
2. Location—Red Lion Convention Center, 200 N. Riverside, Medford, OR 97504
3. Date—November 29, 30, and December 1, 1984.
4. Theme—"The Surveyor and the Profession"
5. Host Chapter—Rogue River Chapter, PLSO
6. Direct inquiries to the Co-Chairman—

Harold L. Center, PLS
2604 David Lane
Medford, OR 97504
(503) 535-4097

Kurt C. Weaver, PLS
616 China Gulch Rd.
Jacksonville, OR 97530
(503) 899-7845

Topics of interest include:

1. The Future of the Surveyor and the Profession—Walter Robillard, past president, ACSM
2. The Benson Syndicate, Then and Now —Jim Fields, PLS and Steve Johnson, PLS
3. Panel Discussion—To Check or Not to Check Surveys
4. Personal Images—Ms. Bettie Henry
5. The Practical Application of Photogrammetry to Cadastral Surveys—Richard B. Davis, PLS

MARK YOUR CALENDAR!
May 22-27, 1985

C.L.S.A.
1985 ANNUAL CONFERENCE
to be held at the Town & Country Hotel & Convention Center, San Diego, California.

CLSA BOARD OF DIRECTORS ENDORSES GROUP MEDICAL INSURANCE FOR CLSA MEMBERS

The California Land Surveyors Association, in an effort to help its members control health care costs, has adopted an association group insurance program underwritten by Dunn & Bradstreet.

This program is a state-of-the-art, flexible medical plan design. It includes such features as a $1,000,000 maximum lifetime benefit, choice of deductible amounts, low family stop-loss, cost containment provisions, also optional dental, disability, maternity, prescription card service, supplemental accident emergency expense coverage, as well as a 12-month rate guarantee.

For further information contact: Gregg and Associates, 1129 East Missouri, Phoenix, Arizona 85014. □

"WE DIDN'T GET TO BE THE BIGGEST OVERNIGHT."

Servco has been supplying the best in precision instruments to the surveying profession for 58 years. Along the way we've learned a lot about this business, and we've grown to be the largest distributor of quality surveying equipment in the country.

One thing we've learned is that the success of any company is based on the depth and responsiveness of its service. And we're happy that our size allows us to give you the best service in the industry.

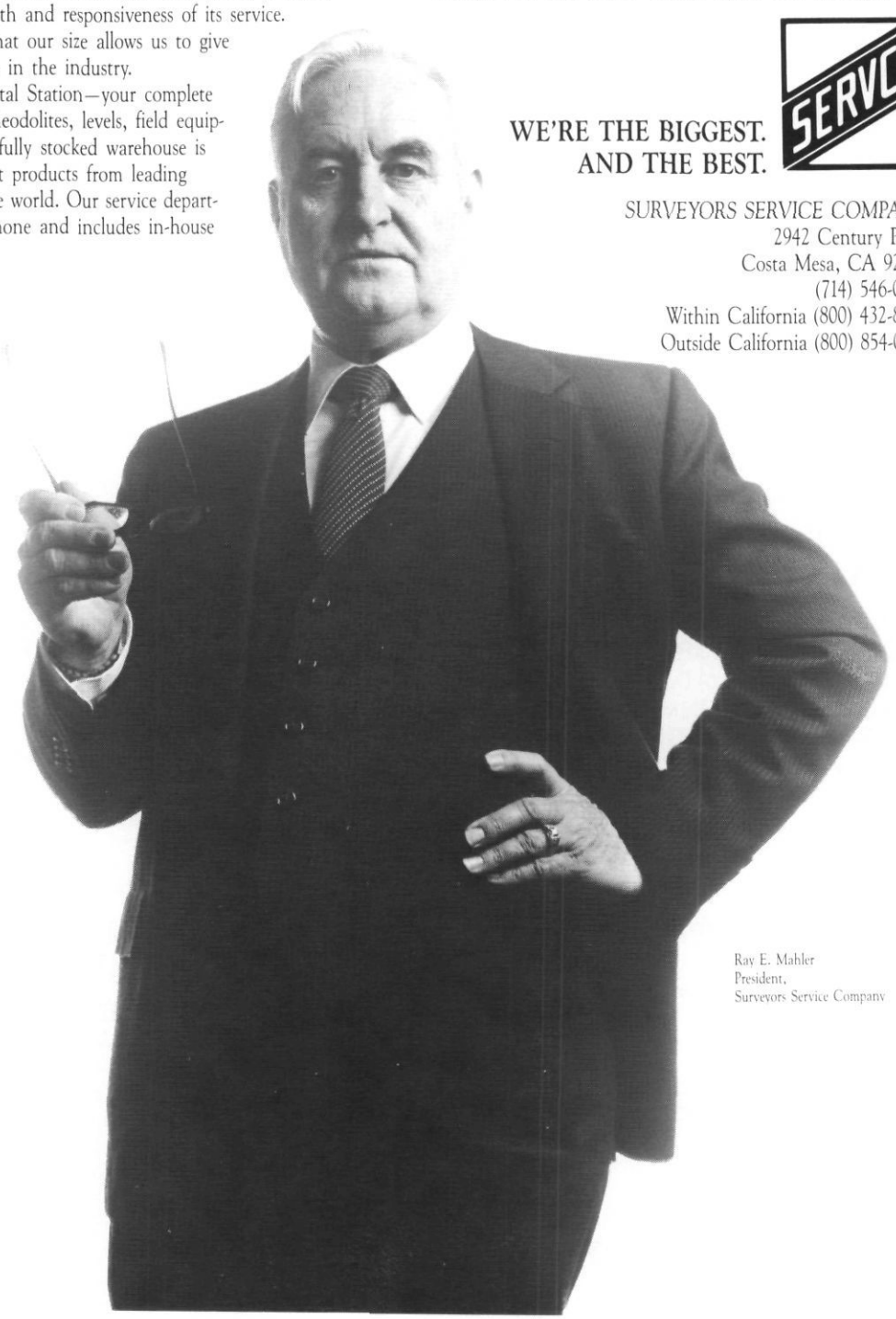
Servco is your Total Station—your complete source for EDM, theodolites, levels, field equipment, repairs. Our fully stocked warehouse is filled with the finest products from leading manufacturers of the world. Our service department is second to none and includes in-house EDM repairs. Our order and delivery department is built for speed.

It's taken us a long time to reach the top. We can help you get there a lot faster. Send for our 150-page catalog and go through it at your leisure—it's too big to read overnight.

WE'RE THE BIGGEST. AND THE BEST.

SERVCO®

SURVEYORS SERVICE COMPANY
2942 Century Place
Costa Mesa, CA 92626
(714) 546-0606
Within California (800) 432-8380
Outside California (800) 854-0471

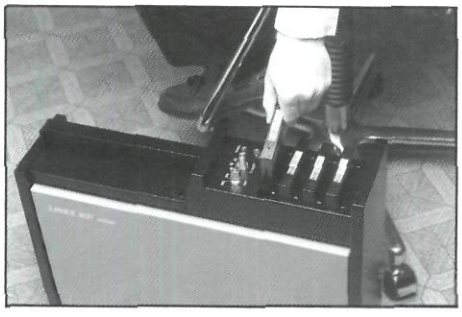


Ray E. Mahler
President,
Surveyors Service Company

CUT DRAWING TIME, INCREASE QUALITY

LINEX SCRIBER

The Linex Scriber is an automated lettering and symbols drawing instrument. A precision tool for the Engineer/Designer/Drafter, the Scriber produces uniform and high quality lettering and other symbols in a fraction of the time it takes to do manually.



COMPLETE SYSTEM

The system is a complete, stand-alone unit. All the software and the microprocessor are housed in a controller unit that rests on the floor next to the drawing table.

SOFTWARE ENHANCEMENTS

The basic system comes complete with all the software you need to be fully operational. You can, however, enhance the basic system with additional memory, pre-programmed symbols /shapes, or different fonts. These enhancements come in the form of simple drop-in cartridges.

USER PROGRAMMABLE

Or if you like, the Scriber comes with the software for you to build and construct your own symbols/shapes. These symbols can be stored in memory along with other repetitious text, notes, etc. Imagine drawing your most complicated and time consuming symbols/title blocks/schedules/certificates in a manner of seconds and with the touch of a button!

INTERFACE WITH PC's

In addition, the Linex Scriber can be interfaced to many of the most popular personal computers.

SIX MONTH PAYBACK

With the speed and productivity gains you soon realize after installation, the Scriber can pay for itself in six months. Customers have even justified the entire cost of the Scriber in as little as 79 days. The cost ; $6,880.00 complete.

Please call for more information or for a no obligation demonstration.

A.D.S./*LINEX, INC.*

3130 Gateway Dr., Ste. 400, Norcross, Ga. 30071

1-800-241-3675

Ga.; 404/448-0977, Telex; 54-3602 ADSATL

UNDERSTANDING SURVEYING INSTRUMENTS

Theodolites vs. Transits
Horizontal and Vertical
Measuring Instruments
by R.I. Lowndes, P.E., R.L.S.

With the current trend toward the use of electronic distance measuring devices (EDM's), the theodolite has become a "household" word in engineering and surveying offices. According to Webster, the origin of the word theodolite is unknown; however, the implication in the United States is that it is a more precise instrument than the American transit. The principal differences between a repeating theodolite and an American transit are the internal optical devices that make reading the horizontal and vertical circles, for a given precision, quicker and easier than with the older vernier type windows on the American transit. Other principal differences are that the repeating theodolite has no magnetic compass built into the base, and is usually optically plumbed over a setup point, rather than aligned with a plumb-bob. Here again, the reader should understand the significance of the instrument, its intended use, and the speed of operation, as well as the corresponding specifications associated with each type.

We have already discussed the desirable features of a telescope for levels, and the same applies for transits and theodolites. Usually, transit and theodolite telescopes are somewhat shorter in length than those for levels and frequently will have a high-powered objective lens. It should be noted that higher-powered telescopes do not necessarily imply better optics. In fact, the writer owns an old Wye type level, having a long tube, low power lens and a spider-web cross hairs which can be readily used on darker, misty days at much greater range and better accuracy than some of the new higher-powered automatic levels, and particularly in the presence of earth-moving equipment when the ground is vibrating.

Regarding the accuracy of the angles to be measured. Again, the analogy of the craftsman using hand tools vs. power tools applies. The properly adjusted American transit using vernier windows can achieve almost any degree of angle accuracy desired, depending upon the number of times the angle is repeated. As a matter-of-fact, an American transit having two windows situated 180° apart on the circle can compete quite well in net time required to achieve a given accuracy as compared to a repeating theodolite using an optical micrometer which only displays one reading and does not display the average of the two sides of the circle. A repeating theodolite and the American transit have the common feature that the horizontal circle can be clamped so as to turn with the alidade, or clamped to the leveling base, thus allowing a desired angle to be precisely set or "carried" between the alidade and the leveling base. This feature has advantages in speed when traversing using single angles only and when the user wishes to turn specific azimuths. Unless the instrument has been designed to permit circle readings 180° apart through vernier windows, or the optical micrometer is the averaging type, then both systematic errors in reading as well as systematic errors in the instrument can accumulate, particularly if there is any eccentricity between the center of the alidade and the circle.

"...the implication in the United States is that it (the theodolite) is a more precise instrument than the American transit."

To achieve a high accuracy in angle measurements in a minimum time, there is a version of a theodolite called a directional theodolite. A directional theodolite differs principally from a repeating theodolite in that the circle **cannot** be clamped to rotate with the alidade. This feature offers both increased speed in operation when several angles are to be measured from a single station at a given level of accuracy. Conversely, it can achieve a higher degree of accuracy in a given time and is usually used for first and second order surveying compared with second to third order work for the American transit or the repeating theodolite.

Since a repeating theodolite is an outgrowth of the method of use with American transit, a better wording would be simply be to define only "directional" theodolites as "Theodolite" and refer to all others as transits.

Since all of these instruments can eventually achieve the same degree of angle measuring accuracy, more or less, then the burden of choice as to which instrument to employ falls squarely on the user. There are a few obvious specification checks the potential user can employ to better help satisfy his particular needs, however.

1. Check to see whether the instrument is a "true" or directional theodolite by observing if there is only one clamp. "So-called" theodolites utilizing two clamps are repeating instruments and should be considered as transits.

2. There is no easy way to determine if the instrument is double centered. However, if the angle reading micrometer lines move in the same direction as the reading when moved off of coincidence, then the probability exists that it is not an averaging type c micrometer. It is reasonable to assume that if the manufacturer did not claim that his instrument was double centered and utilized averaging type micrometers, then they do not exist, since these two features are desirable specifications to claim.

3. If a cross-sectional view of the instrument or the specifications indicate a double centered instrument, but the micrometer reading is effected by centering a reference line between two closely-spaced parallel lines, without showing coincidence lines moving in the opposite direction, then one cannot make any positive statement as to the averaging effect of the micrometer. The chances are that it is not the averaging type; therefore, one should then ask the manufacturer.

4. For the user or potential owner, a meaningful specification that could be provided by the manufacturer would be as follows:

(1) Pointing error (including a variation in atmospheric refraction) $\pm X''$
(2) Error in circle graduation $\pm X''$
(3) Error in reading micrometer (is the micrometer the averaging type) $\pm X''$
(4) Error in reading an N-sec instrument with a Y-inch diameter circle $\pm XX''$

With the above information, one could estimate the 90% confidence level of the instrument.

REFERENCES

1. *Control Leveling: Special Publication No. 226* (Revised 1961), U.S. Coast and Geodetic Survey, 1961.
2. *Surveying*, (Third Edition), Charles B. Breed, John Wiley & Sons, Inc. 1971.
3. *Surveying for Civil Engineers*, Phillip Kassam, McGraw-Hill, 1956.
4. *Engineering Surveying*, W. Schofield, Newnes-Butterworths, 1978.

reprinted from the Tennessee Surveyor, *Oct. 1983*

New from Topcon: The DM-S2 and DM-S3.

The compact, lightweight EDMs built to perform like heavyweights.

Lengthen your reach with these advanced new digital EDMs from Topcon. They're built tough and durable, yet light and compact. And they're designed by the electronic and optical engineers who have earned us a coveted reputation for innovative, precision surveying instruments.

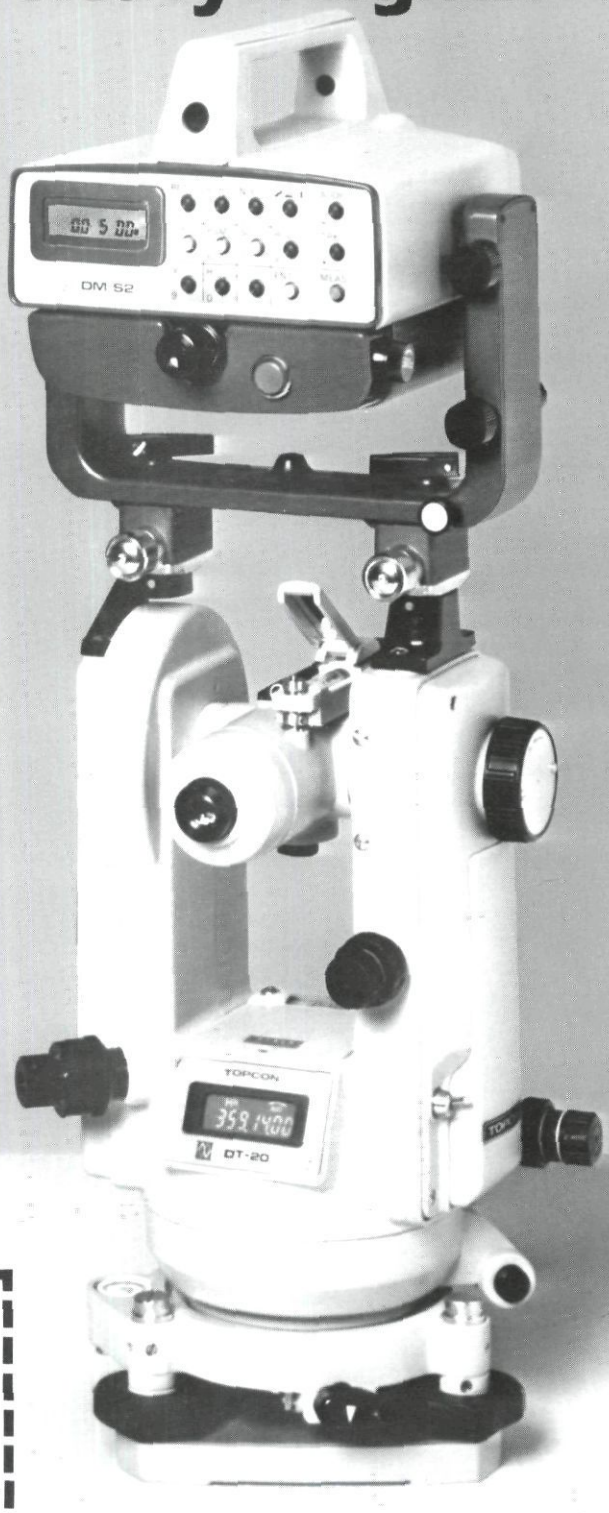
The DM-S2 reaches out to 1.4 km with just a single prism, 2 km with three and to 2.5 km with nine. The DM-S3 covers 2.4 km with one prism, 3.0 km with three and 3.6 km with nine.

To speed your work in the field, you can connect the optional Topcon FC-1 data collector to either EDM. The FC-1 automatically records measurement data. Other information can be inputted through its keyboard. All of this data is transferrable to most computers through readily-available interface units.

With the units' built-in keyboards, you can calculate coordinates. And you can also determine slope reduction with automatic correction for earth curvature.

For quick, easy aiming, both of these EDMs offer precise coaxial sighting. With this Topcon feature, the EDM beam and telescope crosshairs are always in absolute coincidence.

See the new EDMs engineered to go the distance. They're at your nearest authorized Topcon dealer now. Or clip the coupon and mail it today.



TOPCON A NEW WORLD OF PRECISION ELECTRO-OPTICS

TOPCON INSTRUMENT CORPORATION OF AMERICA
65 West Century Road, Paramus, NJ 07652
(201) 261-9450

☐ Please send more information on the DM-S2 and DM-S3 EDMs and the complete line of Topcon surveying instruments.

☐ Please have an authorized Topcon dealer contact me to schedule a personal field test.

Name _____ Title _____

Firm _____

Address _____

City _____ State ____ Zip _____

Phone ( ) _____

Western Regional Office, Showroom & Service Center
325 North Wiget Lane • Walnut Creek, CA 94598 • (415) 947-4800

Q. Why have professional Land Surveyors switched their insurance to Gregg-Miller

Corporate Office: Phoenix Regional: Dallas, Newark, Seattle

A. Gregg-Miller is recognized as a specialist in surveyors' exposures.

Surveyors Professional Liability (E & O)
Buildings and Business Personal Property
Comprehensive General Liability
Auto Liability and Physical Damage
Umbrella
Business Interruption
Workers Compensation
Group Medical & Life

How broad is the Professional Liability Coverage?

1) Express Warranty Exclusion Deleted
2) Includes "Previous Employees" as Named Insured
3) 2,500 Deductible, Higher Deductibles Optional
4) Limit of Liability 500,000 and includes Defense Costs (Higher Limit Available)
5) Provides Prior Acts Coverage - Optional

We are proud to be the endorsed Professional Liability carrier for the following state associations:

Gregg-Miller

Arizona Professional Land Surveyors
California Land Surveyors Association
Professional Land Surveyors of Colorado
Idaho Land Surveyors Association
Professional Land Surveyors of Oregon
Washington Land Surveyors Association

1129 E. Missouri • Phoenix, AZ 85014 • (602) 279-6296 • **Toll Free 1-800-528-1171**

New Products

The Reguly Battery Co., specializes in replacement components in battery packs for Electronic Distance Meters (E.D.M.) and other surveyor related equipment.

Now we can supply and install new rechargeable battery pack inserts in all E.D.M. battery packs. All inserts are of equal O.E.M. capacity and quality at savings from 30% to 75%. Also, they are manufactured by the world's largest independent replacement battery company with more than 15 years experience.

For information, please write or call: Reguly Battery Co., P.O. Box 27033, San Diego, CA 92128, (619) 485-7767.

YOUR
PROFESSION
NEEDS YOUR
SUPPORT

JOIN
CLSA
NOW

Letters to the Editor

To the Editor:

Re: California Surveyor, Summer, 1984, page 7, former surveyor's general.

I believe that George R. Hilby, R.C.E. #221, was the last surveyor general of the state of California. He served under the administration of Friend W. Richardson, who was Mr. Hilby's father-in-law. I worked with and for Mr. Hilby during the 50's and 60's, and gleaned this information from our conversations.

Edward E. Summers
L.S. #3136

Geodimeter's mount-on EDMs--- choice of 2 per application

	Basic Slope		Medium Range		Tilt Sensor	
	GEODIMETER 110	GEODIMETER 112	GEODIMETER 16	GEODIMETER 14A	GEODIMETER 116	GEODIMETER 122
Automatic Reduction to horizontal distance	—	—	—	—	standard	standard
Automatic measurement	standard	standard	standard (2-phase)	standard (2-phase)	standard	standard
Automatic measurement of vertical height (H)	—	—	—	—	standard	standard
Tracking	Update standard	Continuous standard	—	—	Continuous standard	Continuous standard
Data output for connection to Geodat	—	standard	—	—	optional	standard
Automatic calculation of arithmetic mean (D)	—	standard	—	—	—	standard
Remote Object Elevation (R.O.E.)	—	—	—	—	option	option
Increased Vertical Angle Accuracy, ± 30 sec within ± 20 degrees	—	—	—	—	option	—
Tracklight®	—	—	—	—	option	standard
Unicom modulator (one-way voice channel)	—	—	—	—	option	standard
Tracking cycle	2.0 sec	0.4 sec	—	—	0.4 sec	0.4 sec
Accuracy, distance measurements, MSE	5 mm + 5 ppm	± (5 mm + 3 ppm)	5 mm + 5 ppm	± (5 mm + 3 ppm)	± (5 mm + 5 ppm)	± (5 mm + 3 ppm)
Accuracy, vertical angle *as standard*	—	—	—	—	1 min within ± 20 deg	20 sec within ± 20 deg
Beam width, Mrad	2.5	2.5	2.0	2.0	2.5	2.5
Range at Standard Clear						
1 prism	*1400 m*	*2500 m*	*5000 m*	*6000 m*	*1000 m*	*2500 m*
3 prisms	2100 m	3600 m	7000 m	8000 m	1400 m	3600 m
8 prisms	3100 m	5500 m	8500 m	11000 m	2300 m	5500 m
16 prisms			10000 m	15000 m		

Geodimeter®

Geodimeter, Inc.
385 F Bel Marin Keys Blvd.
Novato, CA 94947

Call toll-free today for a hands-on demonstration from the nearest dealer or rep.

800-227-1756
(In Calif. 800-772-2664)

Book Nook

Tidal Datum Planes—This publication describes the criteria and characteristics of different types of tide, how tide observations are conducted and how the different tidal datums are derived. $3.00 ea.

Shore and Sea Boundaries (1962) Reprint 1975—Aaron L. Shalowitz, U.S. Department of Commerce Publication No. 10-1

Vol. II—The Interpretation and Use of U.S. Coast and Geodetic Survey Data . . . . . $11.95 ea.

Restoration of Lost or Obliterated Corners & Subdivision of Sections—a guide for surveyors—U.S. Department of Interior, Bureau of Land Management—1974 Edition . . . . . $.75 ea

Metric Practice Guide for Surveying and Mapping—American Congress on Surveying and Mapping. This Metric Practice Guide has been prepared to aid those engaged in surveying and mapping in the use of the International System of Units (SI) in accordance with recommendations contained in the Metric Conversion Act of 1975, Public Law 94-168 . $1.50 ea.

ORDERS AND PAYMENTS SHOULD BE DIRECTED TO: California Land Surveyors Association, Inc. P.O. Box 9098, Santa Rosa, CA 95405

ITEM NO.	DESCRIPTION	PRICE EA.		TOTAL

Name: _____ TOTAL: _____

Address: _____ MASTER CHARGE OR VISA ACCT. NO.

City: _____ State _____ Zip _____ _____

Expiration Date

Proprietors Council

The Proprietor's Council of CLSA has prepared a Field notebook inserts of the surveyors "Right of Entry" law, Section 846.5 of the State of California Civil Code. This heavy-duty, water resistant (varnished) sheet can be carried in the field book, handy for showing to property owners, as needed. Just hole-punch it to fit your particular notebooks.

Copies may be purchased as follows:

PC Member . . . 3 for $3.00 (min. order)

Non-PC Members . . . 3 for $5.00 (min. order)

Fill out the order blank and mail it to the address indicated.

TO: CLSA PROPRIETOR'S COUNCIL
P.O. Box 9098, Santa Rosa, CA 95405-9990

Please send me _____ sheets of the Field notebook "Right of Entry" law. I am enclosing a check in the amount of _____, to cover the cost of mailing and processing. Please mail to:

_____

_____

_____

Enclosure: Check No. _____

WHEN THE BOSS GETS A COMPUTER

by Kevin Strehlo

An increasing number of business people are finding that one of the ways a personal computer makes them more productive is by letting them take over some of the work their secretaries used to do. What, you ask? How can you become more productive by taking on more work? And your time is too valuable to waste on secretarial tasks, you say? Well, it just may be that you'll spend less time with your reports and correspondence if you take your secretary or word-processing pool out of the loop and do it yourself; as an added bonus, you'll probably find that your writing improves.

After we spend some time showing you how taking over some of your secretary's work can improve your job performance we'll deal with the corollary issue of how you can utilize the time your secretary used to spend typing. Although this sudden freeing of human resources poses a problem of sorts, it is the best kind to have. The people we talked to generally agree that, with a little creative management, the end result is that both secretary and boss are happier and more productive.

Overcoming Resistance

General Electric is an enlightened company when it comes to the use of personal computers to increase productivity. But this enlightenment doesn't go beyond spreadsheeting and data-base management to include word processing. Jeffrey Ehrlich, who oversees GE's application of personal-computing technology from Schenectady, N.Y., explains that the company's large investment in dedicated equipment for centralized word processing is partly responsible, as is a general feeling among GE managers that "typing" is somehow beneath them and not an effective use of their time.

Woody W. Tullis, an organization effectiveness consultant for Fireman's Fund Insurance Companies, is another innovator in the use of personal computers. His current interest lies in using them to teach improved management methods and in exploiting their ability to process not just words and numbers, but ideas. Tullis feels personal computers are too valuable a resource to "waste" on word processing, especially since the company's centralized word processing seems to get the job done. "We don't want our managers to be using their computers for word processing when higher priority tasks have yet to be implemented on them," he says.

Other managers and executives have had similar attitudes turned around, however, by a little bit of hands-on experience with the benefits of word processing. Rolf Mast, director of research and development for consumer products with Lee Pharmaceuticals in South El Monte, Calif., was quite adamant about not wasting his time typing until, at the insistence of president Dr. Henry Lee, he began a word-processing program to do his weekly reports. Although at first his secretary continued to type his correspondence for him, Mast soon took that over too, even though he was only moderately proficient at the keyboard. The reason? He found the urging of his boss to be well-founded: He could do his writing faster and better on his own.

John Schuller, who manages the sales effort of an engineering group for Genrad in Washington, D.C., took up word processing without such high-level urging; in fact, he got involved in spite of the failure or a corporate plunge in that direction. A DECmate dedicated word processor had been sitting unused in a corner of the office for several months when Schuller decided to buy a Kaypro personal computer for his own use. Shortly after he got up to speed on the Select word-processing program

that came bundled with his Kaypro, a sudden resignation left him without a secretary for two months. "Word processing saved my life," he recalls. When a replacement for his secretary was finally hired, Schuller, full of the zeal of a new convert to word processing, put her on the DECmate, typing out the 20 to 30 page quotes his department generated as part of the process of bidding for contracts. He continued to do his own reports and correspondence on the Kaypro.

"I turn out my weekly sales report by myself now in about 20 minutes," he says. "Before, even if my secretary wasn't stacked up with work, it took three hours to turn a report around; of that, about an hour of my time was involved to write it out by hand, redline the first go at it, and then proof-read the final."

Rick Wohleber, who is in charge of supporting personal computing for Rockwell's Microwave Division in Richardson, Texas, agrees that it's faster to do his own memos, letters, and reports on his Apple Lisa computer than go through the "rough it out, edit, and proof it cycle." Even a two-finger typist down the hall has found that it's faster to do reports himself, Wohleber says. Moreover, his colleague's conversion to Lisa-Write has simplified communications when he and Wohleber occasionally write a report together. They simply pass a diskette back and forth.

Leslie Rosen, president of Expose, a New York firm that specializes in publicity for the record industry, goes so far as to say that word processing has changed the way she works. "The ease with with which I can write, edit, spit out copies, file, store, and retrieve, without secretarial assistance, is amazing," she says. "It's 3:15 right now and I know I have three letters to get out, but I'm not worried. My secretary can continue answering the phone, filing, whatever. I know I can zip through those letters and still be out of here by 4:30. And word processing means I have the time to be perfect."

Rockwell's Wohleber concurs. "You just work on it up on the screen until *you* are satisfied with it; only then do you print it out," he says. No longer must he send out reports that could stand a little more polishing, he says, and joins Rosen in the observation that word processing may make messy "white-out" corrections obsolete.

"The improvement in appearance is really dramatic," elaborates Rosen. She credits word processing with actually bringing in some business through a tightening of her prose and some thoughtful use of centered lines and boldfaced words. A letter on behalf of a client actually brought back a letter complimenting her work in detail, right down to the centered lines and expressing interest in obtaining similar publicity services, says Rosen.

Many of personal-computer users cannot claim similar improvements in the appearance of documents, and in fact turn out documents that are markedly less attractive because they're printed on a dot-matrix printer. But Genrad's Schuller notes that a kind of reverse snobbishness is beginning to make dot-matrix memos acceptable, if not *de rigeur*, within Genrad, because telltale dots show that the sender is a person of status: a personal-computer user.

The strongest argument in favor of business people using word-processing software, however, is improvement of writing. Gregory L. Kilsey, a senior analyst for the San Francisco venture capital firm of Hambrecht and Quist, says he was quite happy with the switch from using a secretary to doing it himself, even though he had never typed before he began to use his Lisa computer. "The kind of thoughtful, analytical writing I do was not conducive to dictation," he explains. "I can easily keep up with my thought processes despite my rather clumsy typing, and then I make use of the really slick features like cut and paste to improve my first draft." Kilsey discovered—as do most people who get the chance to edit their writing without the penalty of a retype—that the freedom to revise granted by word-processing software improves writing immensely.

Genrad's Schuller agrees. "Because I can delete things, and move text around, I'm so much briefer in my writing, so much more succinct," he says. He recalls one report he did over a weeekend at home that demonstrated how much his writing improved when he brought the full power of his word-processing software to bear. "I worked at the report for an hour, went jogging, came back to it for another hour, watched a football game, and so on all weekend," he explains. "I eventually managed to cut 10 pages down to four very meaningful pages. It probably wasn't apparent to people who read it just how much effort went into it—they just thought it was a well-written synopsis of how a decision was made. But it impressed a vice president here enough so that he made it the basis for a war game scenario for sales trainees."

From grunt to decision-maker

In some cases, when people who used to rely on secretaries to type correspondence and reports begin doing it themselves on a personal computer, the result is a reduction in the number of secretaries. Rolf Mast at Lee Pharmaceuticals, for example, says the company has saved significantly by nearly eliminating secretaries from the payroll.

More often, however, secretaries pick up other support duties to replace the typing taken away by the boss's use of word processing. Rockwell's Wohleber says that to some extent there will always be a need for someone to do support work. His secretary keeps pretty busy, he says, just with tasks that are supplemental to the production of the written word, including copying and distributing reports and producing transparencies for presentations.

Kilsey agrees that the need for someone to do support work will probably never end. "A program couldn't take the place of what my secretary does," says Kilsey, "simply because so much of it involves contacting people for me and managing my time." Exposes Rosen agrees, saying that better utilization of her time is near the top of her list of benefits resulting from her secretary's emancipation from typing.

"The time picked up certainly isn't wasted," says Rosen. "Every office has more work than you can do, so there's always something, even if it's just going through some magazines I haven't had time for getting ahead on a project." Although Rosen recognizes that this kind of "always something" assignment runs the risk of seeming to be mere busywork, she says the resultant potential for dissatisfaction is more than offset by the relief from boredom and frustration. "Was my secretary miffed when I took away her typing—are you kidding?" asks Rosen. Nothing is more boring, according to her secretary, than mechanically typing letters composed by somebody else.

Brice Schuller, senior vice-president of Scroggin & Fischer Advertising in San Francisco, says the installation of personal computers in the agency's office has, in essence, "taken people off clerical work and put them on the decision path." The upgrade in responsibility for the secretarial staff, he says, is in large part what has enabled the agency to double its billings while staff size grew only from 22 to 32 people. Moreover, the benefit of eliminating secretarial retyping from the copywriting loop is augmented by the elimination of expensive rekeyboarding and proofreading at the typesetting shop. The agency has saved 40 percent on its typesetting bill and reduced turnaround time by handing the typesetter a disk rather than a manuscript.

Secretarial computing

Doing your own word processing doesn't have to take your secretary out of the written word loop entirely, however. Scroggin & Fischer's Brice Schuller says he often composes letters on the computer at his full typing speed, edits their content, and then passes a

disk to a secretary. She corrects the typos, runs the letters through the spelling checker, adds addresses, prints out the letters in the correct format, and stuffs the envelopes. Howard Neal, a San Francisco lawyer, is just one of the many others who also pass disks to a secretary. Neal says time spent formatting and printing is not time well spent by highly paid managers and professionals.

Rockwell's Wohleber concludes that whenever a manager spends much time using a personal computer, whether it's for word processing or for a task that falls outside the traditional realm of a secretary, the definition of a secretary's support role should expand to encompass it. "Most secretaries who report to senior executives at Rockwell have learned to use their computers," he says. "Executives don't have the time to type in a list of names and numbers, for example. Sometimes the support person will even set up a spreadsheet for them."

John Dunn, director of education for the Quest-Simtec chain of computer dealers, seconds this notion. Incorporated into Quest computer courses is the idea of leveraging time by allowing support employees to accomplish that part of a computing task that does not demand the skills of an executive. He paints the following scenario for an executive who doesn't have much time to use—or to learn to use—a personal computer. "Get this executive a Lisa, because the software is so easy for an executive to learn and remember how to use," says Dunn. "An analyst under him then does the initial work on a spreadsheet and passes the model he has built to the executive, who manipulates and fine tunes the numbers. He in turn passes it on to his secretary, who uses LisaGraph to turn those numbers into a chart, Lisa-Draw to enhance the chart for a presentation, and then incorporates the graphic into a report the executive roughed out for her editing using LisaWrite."

Another example of secretaries becoming involved in personal computing comes out of Beckman Instruments in Brea, California. The beginning of the story is familiar enough: Documents were processed by the word-processing department rather slowly. In this case the Beckman engineers had to put up with nearly intolerable delays, because the word-processing department was in a neighboring city. A day to get there, a day or two for the work to be done, and another day spent in transit back to Brea for correction and resubmission really added up. When the engineers couldn't wait, secretaries typed up their longhand roughs and retyped each of the edited versions, but their workload was such that turnaround still wasn't fast enough. "The engineers finally broke down and learned WordStar," says Cathie Curtis, a microprocessor engineer who supports personal computers throughout the corporation.

Curtis leveraged the advantages of word processing by setting up a kind of template system with prompts that guided engineers, thus automating a process that was often slowed when engineers suffered from writer's block in front of a blank monitor screen. "We have to have someone go through it and clean it up, but at least it gets the engineers to do their documentation," she says.

The secretaries' involvement in personal computing beyond the minor cleanup of WordStar documents includes use of SuperCalc and Multiplan. "They work with a manager to do departmental budgets and that kind of thing," says Curtis. Her engineering group also needs to keep track of an inventory of several million dollars worth of lab parts and integrated circuits, she says, as well as a large number of purchase orders, and Curtis has gotten secretaries involved in the data-base management. "They know how to enter data, sort, and search for data," she says, "and although they aren't setting up their own data bases yet, that should come soon."

At smaller firms, secretaries have even taken over the role, filled by Curtis at Beckman, of keeper of the computers. Howard Neal, for example, hired a secretary who already had some experience with computers and who quickly picked up the programs and utilities being used on the San Francisco law office's TeleVideo computers. "We moved him into a mangement position of sorts to take advantage of his affinity for computing," explains Neal. "He not only manages the secretaries, he's also the most knowledgeable in the use of the timekeeping and billing software we run, and is currently in charge of getting us up on a general ledger program."

This trend toward secretaries becoming keepers of the computers is logical given their traditional role as keeper of other office equipment and their growing involvement in personal computing. But it in no way explains what happened at Rockwell when Rick Wohleber and his colleagues took up word processing. The excess of secretarial help, caused by the lightened typing workload, was handled by the promotion of one of the secretaries to the position of junior programmer.

Ordinarily, using a personal computer does not lead business people into programming, mind you. It makes sense in this case only because Wohleber was also involved in minicomputer and mainframe computer activities at Rockwell. "Programming was a natural for her, because she had been exposed to it and learned enough to know she wanted to take a shot at a junior programming position," says Wohleber. Of course, few secretaries are going to have a chance to become—or even want to become—junior programmers. "But the point is that in almost any department there is a similar need for a junior whatever," explains Wohleber.

Using your secretary's knowledge

Certainly such promotions have not been extremely common in the secretarial ranks; people who've been in clerical positions for many years are often comfortable there, and harbor few desires to tackle new challenges. At least that's the common view: a perfect example, perhaps, of not being able to teach an old dog new tricks? "Actually," counters Wohleber, "I think the older person has an advantage in knowing exactly how a department operates." Wohleber is not alone in his belief that almost everyone has growth potential, and says the dilemma posed by managers taking on some of their secretaries' work can be turned to everyone's advantage. "It's not as if you have to throw secretaries with 20 years of experience out on their ears when they're displaced by a personal computer. It just calls for a little creative people management."

An obvious opportunity for such redefinition of a secretary's role existed at the law offices of Howard Neal when the lawyers there began doing much of their legal writing on a personal computer. Law offices typically have a hierarchy of attorneys, legal assistants, and secretaries, but Neal says most good legal secretaries are quite capable of the extra originality required for the legal assistant-type chores. Legal assistants prepare documents without benefit of a dictated tape or handwritten draft, going to a book of forms, deciding which one is appropriate, and getting the necessary information from client files to complete a draft. "I found that as a result of my abilities with the word-processing software, and because my secretary is spending less time doing raw typing, I can give her more responsibility in the preparation of corporate articles, or bylaws, or a set of interrogatories. I don't have to go to the book of forms or client file myself. Instead, I just edit her draft, coming to some judgement as to whether the language really applies to the case, making revisions if it doesn't, and then hand it back to her to get it into final form for printing. As a result, then, of learning word processing, Neal says the office has been able to leverage the abilities of its secretarial staff and avoid hiring more legal assistants.

Jackie Garcia was similarly leveraged by California-based Creative Home Loans when the introduction of a computer took away her typing chores. Because she knew a lot about the com-

pany, and had been in constant contact with the real estate brokers who gave the company their business, the company decided not to lay her off. "The logical thing to do with me was put me in new business development," she says, "but I need a real estate license for that." She was quite enthused when, typing behind her, she was sent to school to prepare for her real estate board exam, in the meantime assuming a support role in escrow department.

A similar scenario ensued at the Genrad department under John Schuller, where secretaries who once spent time typing reports and long quotes now had the time to organize leads for the sales force, compose follow-up letters, and do other work that was more marketing oriented.

"The key is that they're relieved of all that tedious typing," says Schuller. "They were happy to let the computer take over their grunt work, and not just because it gives them more free time: it's because they now have more creative work to do."

Managing the new secretary

The impact on managers of secretaries who are no longer burdened with stacks of typing is obvious: It is up to mmanagement to decide how to utilize the new people power. Brice Schuller has spearheaded the introduction of personal computers and word processing throughout Scroggin & Fischer Advertising. His secretary no longer does any typing. Brice brought her along slowly in various computer tasks to fill that free time, teaching her how to use the agency's data-base management system sort program, helping her build report forms until she got the hang of it, and got her started with a spreadsheet program, until she had been upgraded, essentially, from clerical duties to data management. Not everyone is capable of such a transition, however, which—to put it delicately—influenced several personnel decisions made by the agency. And the impact extends to the hiring of secretarial help as well.

"Essentially, you try not to hire people who are intimidated by machines," says Schuller. "And you're no longer looking for someone who will be content just to file and type: You ask them if they like to be challenged. If they look at that green screen burning behind you and have to comment—'Oh, I see you work with one of those computers'—right away you say, 'maybe this is the wrong person.'" Schuller says you have to probe a bit, asking the secretarial candidate if he or she has ever operated a computer, or would like to learn how to use one, or if computers seem scary.

There are areas besides computing where the skills of a secretary partially displaced by a personal computer can be used, of course, but in any case management has to think about any change in the person's expectations resulting from the redefined position. Sometimes, as in the case of the secretary at Rockwell who became a junior programmer, there is a well-defined change in responsibility, status, and appropriate compensation levels. Other times, a secretary given new responsibilities may feel he or she deserves a commensurate increase in status and compensation. If such an expectation isn't foreseen, or if management feels the change in duties does not constitute a promotion, trouble certainly lies ahead.

After Jackie Garcia received her real estate license and began to work on developing new business, she expected a change in status that never came. "In effect, they changed my job description without changing my salary to reflect the increased responsibilities, so I left," says Garcia. Her knowledge of the business and the investment made in her education probably would have made a salary increase far less costly than allowing her to leave.

Janice Blood, director of public information for 9 To 5, a national association for working women, says that similar situations exist in many business arenas, and the resulting discontent and associated problems are undoubtedly on the increase. Her organization often hears complaints about legal offices, for example, where a secretary's job has been broadened to encompass the duties of a legal assistant while the secretary continues to make much less than a legal assistant's salary. Raising clerical people to positions of higher responsibility is well and good, but it only makes good sense if you raise pay levels commensurately.

Even if all you've done is taken away a bit of typing and gotten your secretary trained to take care of some of the details of personal computing, don't think you haven't raised his or her prospects and expectations a bit. Robyn Sheehan, a secretary for Cahner's Publishing in San Jose, Calif., says she's happy where she is, partly because she does so much less typing now that personal computing has come to her office. But she's happy about learning WordStar, PerfectCalc, and how to troubleshoot the computers in the office for another reason as well: "When the time comes for me to look for another job, saying I know all this computer stuff will look a lot letter on my resume than just saying I know how to run a Selectric typewriter," Sheehan says.

If you have taken on some clerical tasks in the interests of excellence and efficiency, therefore, and maybe even succeeded in figuring out how this affects the role your secretary plays in helping you get your job done, it might be wise to recognize her enhanced value, now that she's doing more than just typing. □

New Members

WELCOME NEW MEMBERS

CORPORATE MEMBERS

David L. Walden, LS
-Santa Ana
David R. Souza, LS
-Los Banos, CA
John J. O'Dell, LS
-Grass Valley, CA
Dennis H. Dillman, LS
-San Bernardino, CA
Michael D. Cranston; LS
-Coalinga, CA
Martin D. Paquette, LS
-Sebastopol, CA
William T. Hurdle, LS
-Reseda, CA
Robert N. Baxter, LS
-Aguanga, CA
Marvin B. Kuhn, LS
-San Bernardino, CA
Robert L. Strader, LS
-Granada Hills, CA
Robert G. Faler, LS
-San Jose, CA

STUDENT MEMBERS

Paul Kittredge
-Fresno, CA

ASSOCIATE MEMBERS

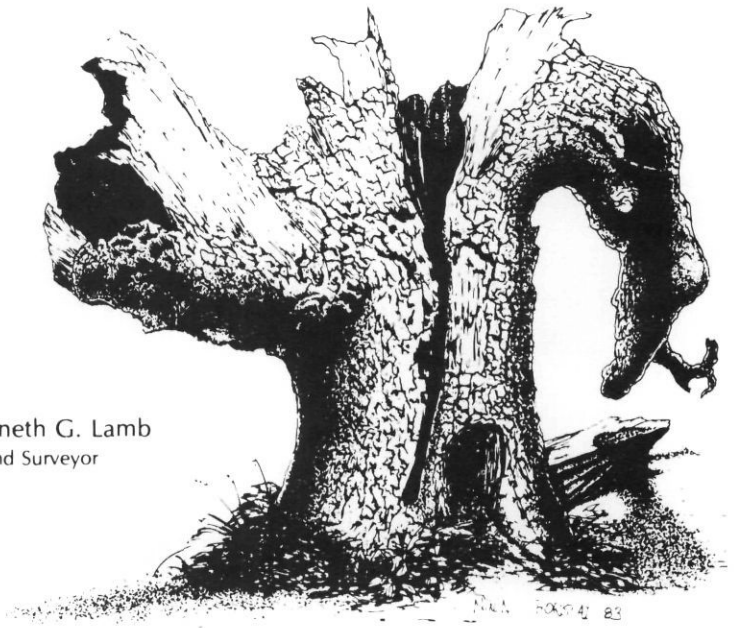
Ted G. Goldsmith
-Menlo Park, CA
David Eisenberg
-San Diego, CA
Brian Baden
-Colton, CA

AFFILIATE MEMBERS

John Kennaly, RCE
-Atascadero, CA
Gara S. Getreu
-San Jose, CA

Advertiser's Index

THE MERIDIAN OAK



By Kenneth G. Lamb
Land Surveyor

Long scourged by wind and rain and staring sun
This sentry at the New World's birth and rise
Is fallen now, his passing mourned by none,
His gnarled limbs no longer span the skies.

Spectator to the wandering Indian band,
Sun-shelter for wild cattle brought from Spain,
Bold Landmark - branded by surveyor's hand
To blaze a trail across this coarse terrain.

A sturdy sapling when Columbus sailed,
Full grown before the Spanish quested here,
A five-foot monarch near the chainman's trail
And witness to the monuments set near.

Healed scars attesting to his proven worth,
The shattered sentinel returns to earth.

Sustaining Members

SUSTAINING MEMBERS (Continued)

The California Surveyor

Published Quarterly by the
CALIFORNIA LAND SURVEYORS ASSOCIATION
POST OFFICE BOX 9098
SANTA ROSA, CA 95405-9990

BULK RATE
U.S. POSTAGE
PAID
Permit No. 635
Santa Rosa, CA