Institutional Affiliate of American Congress on Surveying and Mapping

The California Surveyor

THE VOICE OF THE LAND SURVEYORS OF CALIFORNIA

NO. 43 FALL EDITION 1976

LAND SURVEYING—A VERSATILE PROFESSION

by Wm. C. Wattles, L.S.

Preface

This paper will present various aspects of the investigation and work of the Land Surveyor, with a general discussion of procedure. The field is too great to examine and expand details covering all phases. The application of principles must be left to the individual judgment and experience of the Surveyor.

No comment or examination of practices developed in our other branches of the Surveying Profession, will be made, other than brief reference for the purpose of association with Land Surveying practice.

Introduction

"Surveying" is a generic term embracing many branches or specialties of the Profession developed thousands of years ago for the purpose of defining and maintaining dimensional relations of and between areas of the earth's surface, in the air, and under the ground.

The Profession is sui generis, and not to be assumed or subordinated to so-called Civil Engineering. The latter is also a generic term, although generally considered as a multiple creature of human devices in construction and building. Surveying, of course, enters into practically all Civil Engineering projects, but as an associate, not as a subordinate.

The branches of surveying are many, all possessing similar basic procedures in equipment, instruments, concept, and perpetuation. Each specialty requires, in addition, a specific formulation to promote the work more efficiently for the project.

Survey specialties embrace Structural alignment; Road development in alignment, grade, drainage; Topographic surveys and maps for various projects requiring area and elevation data; Photogrammetric processes for mapping and ground location of natural and artificial objects; Geodetic determination of areas and dimensions on the earth's surface related and referred to a theoretical spheroid approximating the shape of the earth; Cartographic maps, developed from geodetic data; Navigation and Aerial surveys; Hydrographic; Mineral and Mining; and, most important and versatile of all, the Land Survey, also known as the Property Survey.

Land Surveying requires an understanding and fair working knowledge of all the above named branches, as well as training and ability in the particulars of its own field. These latter embrace gathering information and research of old and modern data of record for confirmation and correspondence with physical location of the area under consideration; correlation of ground area with title as determined through documentary record and legal requirements of ownership; discovery and relocation of lost or obliterated boundaries; remonumentation and perpetuation of corners with corresponding documentary description and mapping for permanency of record; exercise sound judgment and interpretative faculties together with sound field and office procedures.

The variety and broad scope of land survey problems, together with the frequent spot variations vital to proper

(Continued on page 14)

BOARD RESOLUTION

WHEREAS The California Land Surveyors Association supports quality land surveying and finds it to be in the public interest; and

WHEREAS the original goals of C.L.S.A. expounded this same principal,

THEREFORE be it resolved that The California Land Surveyors Association shall form a committee to promote liaison with other professional organizations to attain the acceptance of the National Council of Engineering Examiners Model Law, and let it be

FURTHER RESOLVED, that said committee shall investigate legal remedies to achieve removal of the Civil Engineers exemption from the Land Surveyors Act. The membership of said committee should consist of at least one member each from the following committees: 1) Legislative 2) Liaison to the Board of Registration and 3) President's Advisory Committee. ▲

C.L.S.A. LEGISLATIVE COMMITTEE REPORT

by Richard Fultz, L.S.

As the 1976 Legislative session approaches its final recess, scheduled to begin September 1, the CLSA legislative committee is continuing to monitor a number of bills affecting Land Surveyors.

CLSA's bill, AB 4074, which designates Land Surveyors as professional employees for purposes of representation under Section 3507.3 of the Government Code, has been approved by the Senate Committee on Governmental Organization and sent to the Senate floor.

AB 1511, CLSA's "education" bill has been chaptered (Chapter 339, Statutes of 1976) and will become effective January 1, 1977. AB 1511 is shown below in its final form:

Assembly Bill No. 1511

CHAPTER 339

An act to amend Sections 8740.1 and 8742 of the Business and Professions Code, relating to land surveyors.

[Became law without Governor's signature July 4, 1976.
Filed with Secretary of State July 6, 1976.]

LEGISLATIVE COUNSEL'S DIGEST

AB 1511, Chappie. Land surveyors: examination.

(1) Existing law provides for separate application for each division of land surveyors' examination, and specifies that the examination for the first division is to test the applicant's knowledge of certain subjects. Existing law does not prescribe necessary educational or experience requirements for the first division examination.

This bill would permit the State Board of Registration for Professional Engineers to prescribe by regulation reasonable educational or experience requirements, not to exceed two years of postsecondary education in land surveying or two years of experience in land surveying, for admission to the first division of the examination.

(2) Existing law specifies the minimum educational qualifications and experience in land surveying, which an applicant for the second division examination is to possess, including actual experience or equivalent land surveying experience.

This bill would revise such actual experience and equivalent land surveying experience qualifications.

The people of the State of California do enact as follows:

SECTION 1. Section 8740.1 of the Business and Professions Code is amended to read:

8740.1. The first division of the examination shall test the applicant's knowledge of fundamental surveying, mathematics, and basic science. The board may prescribe by regulation reasonable education or experience requirements but not to exceed two years of postsecondary education in land surveying or two years of experience in land surveying for admission to the first division of the examination. Applicants who have passed the engineer-in-training examination, or who hold pro-

(Continued on page 12)

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."

Advertising

Commercial advertising is accepted by "The California Surveyor" and advertising rates and information can be obtained by contacting the Editor, P.O. Box 3707, Hayward, CA 94540.

Classified advertising is published at the rate of $2 per line for members of C.L.S.A. and $4 per line for non-members and should also be directed to the Editor of "The California Surveyor."

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," P.O. Box 3707, Hayward, California 94540.

EDITOR: Michael S. McKissick, L.S.
P.O. Box 3707
Hayward, CA 94540 Phone 415-581-1070

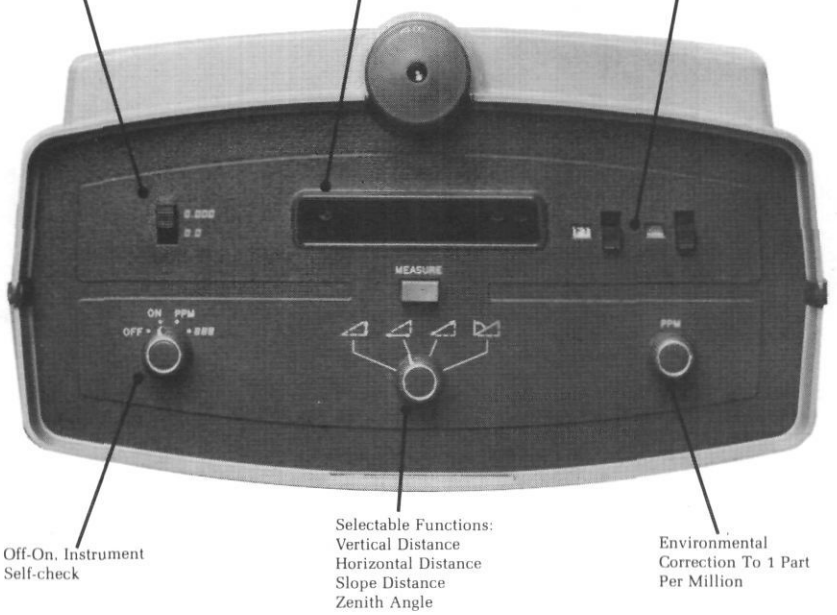
DEADLINE DATES FOR THE CALIFORNIA SURVEYOR

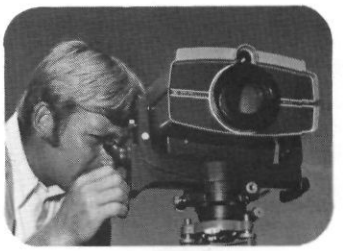
WINTER .....NOVEMBER 13, 1976
CONVENTION .....JANUARY 14, 1977

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

New-Total Station.

Angle and automatic horizontal distance measurements from one instrument.





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3RD ANNUAL NORTHERN CALIFORNIA LAND SURVEYORS CONFERENCE

HOLIDAY INN CHICO, CALIFORNIA
SATURDAY—OCTOBER 30, 1976

8:00 A.M.	Registration
9:00 A.M.	Roy Minnick, LS (State Lands Commission)—"Thompson vs State"
9:50 A.M.	Coffee break in exhibit area
10:00 A.M.	Eugene Lafferty, LS (Great Basins Aerial Services)—"Retracement of National Park Boundaries by Photogrammetry"
10:45 A.M.	Coffee break in exhibit area
11:00 A.M.	Larry Hyder, Forester (Private Practice)—"Footsteps or Foul Play"
11:45 A.M.	Lunch Break
1:30 P.M.	A. E. Griffin, LS, President of CLSA (Bureau of Land Management) "CLSA—'76"
	Richard Fultz, LS, Chairman of CLSA Legislative Committee (R. G. Fredricksen & Associates)—"Present & Future Legislation"
2:15 P.M.	Coffee break in exhibit area
2:30 P.M.	Gurdon H. Wattles, LS (Self-employed author and lecturer) "Title Problems and Government Land Surveys"
4:00 P.M.	Coffee break in exhibit area
4:15 P.M.	Panel Discussion: Minnick, Lafferty, Hyder, and Wattles
5:30 P.M.	No-host cocktails
6:30 P.M.	Dinner (Top Sirloin)
7:15 P.M.	Professor Lew Oliver (Retired) "Lebanon and Iran—Prospective on the Present" (Slide presentation)

Ladies activities are planned during the day

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REGISTRATION		No.	TOTAL
CLSA Member	$12.00		
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Lunch	4.25		
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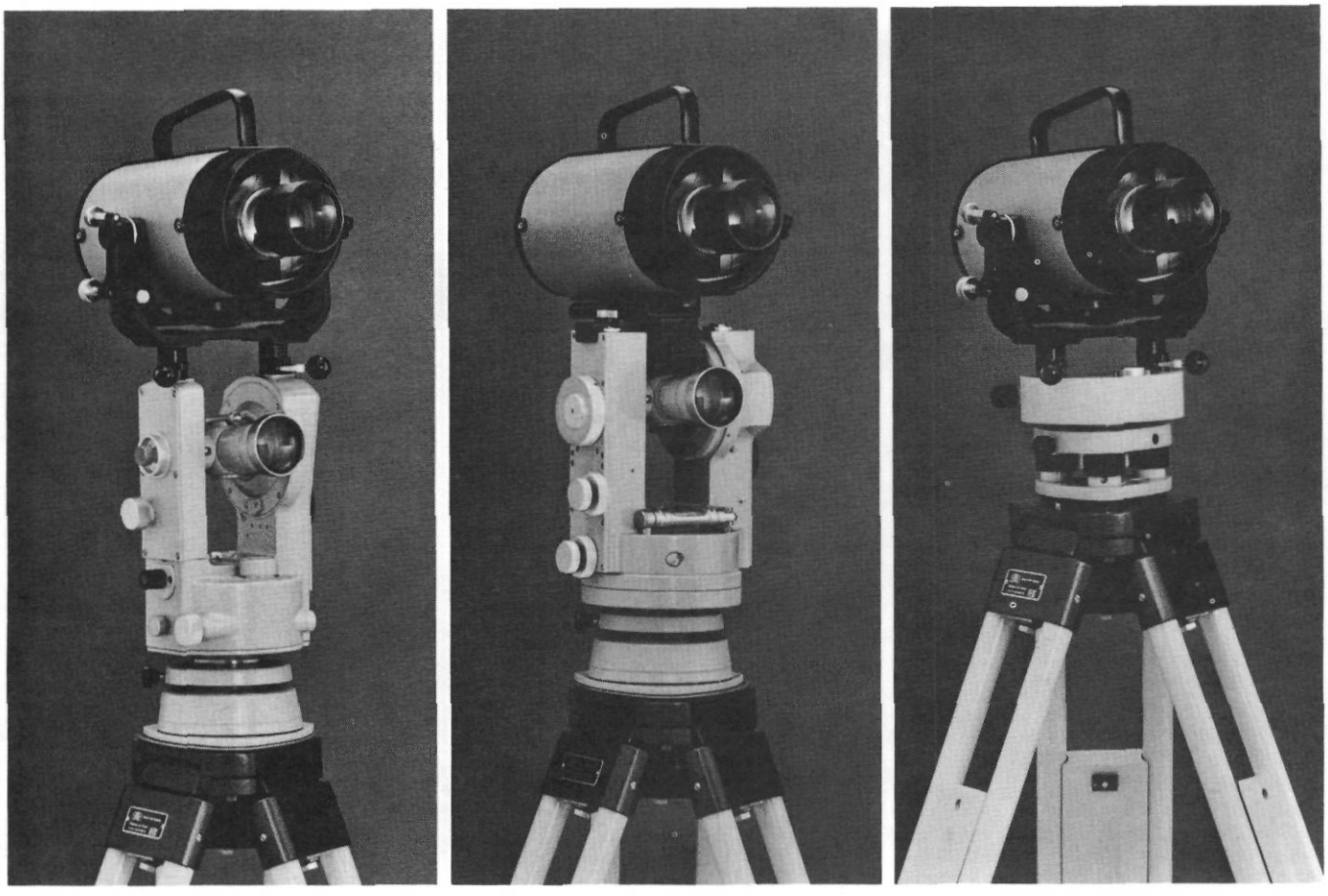

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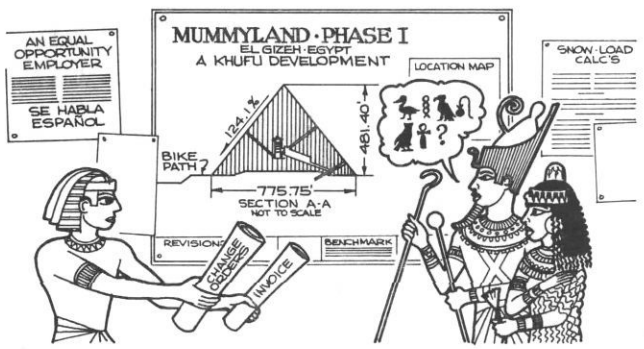
Backsights on Surveying

THE "ROPESTRETCHERS" OF ANCIENT EGYPT AND THE GREAT PYRAMID OF KHUFU AT EL GIZEH

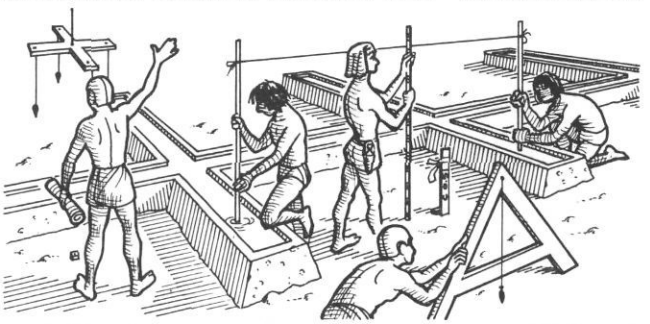
THIS MASSIVE EDIFICE - THE OLDEST AND LARGEST OF THE THREE PYRAMIDS AT EL GIZEH ON THE WEST BANK OF THE RIVER NILE NEAR CAIRO - IS THE LARGEST STONE STRUCTURE ON EARTH. IT WAS BUILT ABOUT 2600 B.C. BY THE SECOND KING OF THE FOURTH DYNASTY, CHEOPS (DBA: KHUFU, PHARAOH OF EGYPT) FOR HIS TOMB. THE PYRAMIDS OF ANCIENT EGYPT, OLDEST AND ONLY EXTANT WONDER OF THE SEVEN WONDERS OF THE ANCIENT WORLD, STAND TODAY AS EVIDENCE OF THE KNOWLEDGE, SKILL AND INGENUITY OF THOSE REMARKABLE SURVEYORS AND ENGINEERS WHO CREATED THEM FORTY-FIVE LONG CENTURIES AGO.

ACCORDING TO THE GREEK HISTORIAN HERODOTUS, THE ROAD FOR THE CONVEYANCE OF BUILDING MATERIALS FROM THE NILE TO THE SITE TOOK TEN YEARS TO CONSTRUCT.



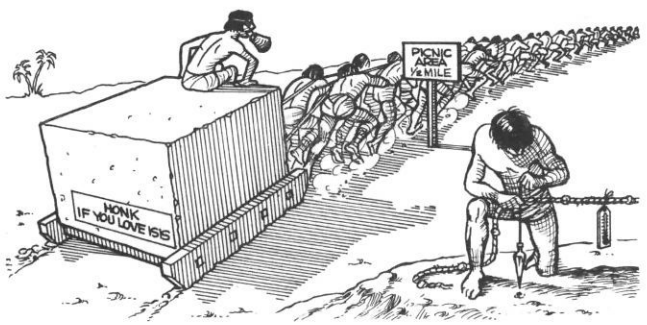
AFTER THE CLIENT, KHUFU, HAD TWICE INCREASED THE SIZE OF THE PROPOSED PYRAMID - AND THE DESIGN OF THE INTERIOR, WITH ITS VANDAL-PROOF CORRIDORS, ITS PASSAGEWAYS, AIRSHAFTS, GRAND GALLERY AND KING'S CHAMBER, HAD BEEN REVISED ACCORDINGLY - THE PLANS WERE APPROVED, THE E.I.S. PREPARED, THE FEES AND DEPOSITS PAID, THE PARCEL MAP RECORDED, THE PERMITS ISSUED, THE FINANCING ARRANGED AND THE CONTRACTS LET, THE CONSTRUCTION ON THE PYRAMID ITSELF BEGAN.

THE 13 ACRE BASE, AN ALMOST PERFECT SQUARE WHOSE SIDES ARE ACCURATELY ORIENTED TO THE CARDINAL POINTS, WAS FORMED OF STEP-LIKE TERRACES HAND-HEWN FROM A ROCKY PLATEAU AND LEVELED SO EXPERTLY BY A SERIES OF WATER TRENCHES THAT THE SOUTHEAST CORNER OF THE PYRAMID STANDS BUT 0.04 FT HIGHER THAN THE NORTHWEST CORNER EVEN AFTER 4½ MILLENNIA.



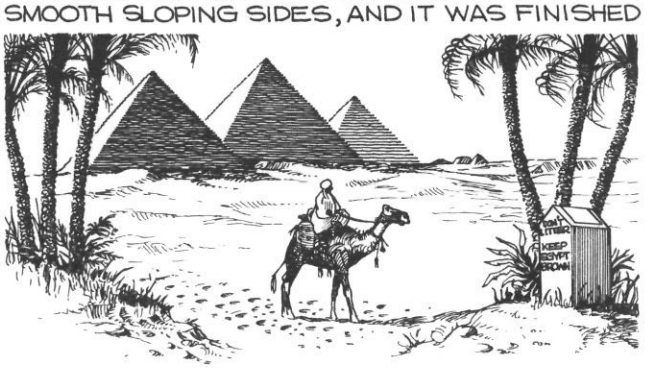
THE EGYPTIAN SURVEYOR WAS THE ORIGINATOR OF GEOMETRY, THE GRADUATED MEASURING ROPE, THE "A" LEVEL, THE 'GROMA' FOR TURNING RIGHT ANGLES, PROCEDURES FOR RESETTING BOUNDARY STONES LOST BY FLOOD AND THE COFFEE BREAK.

THE GREAT PYRAMID WAS BUILT OF SOME 2,300,000 PRECISELY-CUT BLOCKS OF LIMESTONE AND GRANITE WEIGHING AN AVERAGE OF 2½ TONS EACH AND AS MUCH AS 16 TONS WHICH WERE CUT IN DISTANT QUARRIES, HAULED TO THE SITE AND SET INTO PLACE WITHOUT THE USE OF THE WHEEL, TACKLE AND PULLEYS, DRAFT ANIMALS OR EVEN O.S.H.A.



BECAUSE THE SIERRA CLUB, COASTAL COMMISSIONS, ENVIRONMENTAL AND PLANNING AGENCIES, ETC., DID NOT YET EXIST, IT WAS POSSIBLE FOR ONLY ABOUT 4,000 CONSTRUCTION WORKERS AT A TIME TO COMPLETE THE PYRAMID IN BUT TWENTY YEARS.

AFTER THE LAST MASSIVE STONE HAD BEEN SET IN PLACE, MASONS - BEGINNING AT THE APEX OF THE PYRAMID - CUT DOWN THE BLOCKS TO FORM THE SMOOTH SLOPING SIDES, AND IT WAS FINISHED



IN THE CENTURIES FOLLOWING THE COMPLETION OF THE PYRAMIDS, CHINA WAS TO GIVE US THE COMPASS; MESOPOTAMIA, ASTRONOMY AND ALGEBRA; GREECE, TRIGNOMETRY AND GEODESY; ROME, THE PLANE TABLE; ARABIA, THE ASTROLABE; HOLLAND, THE TELESCOPE, AND INDIA, THE INK, BUT IT WAS THOSE "ROPESTRETCHERS", PRACTICING THEIR ART IN THE VALLEY OF THE NILE, WHO GAVE US....SURVEYING.

Wm J. McGee

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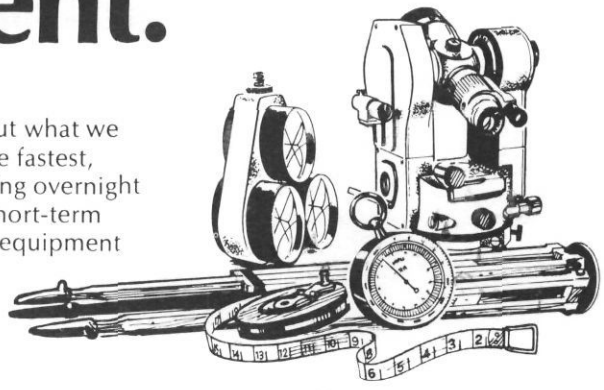

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1977 CONVENTION

DATE: March 17th through March 19th
PLACE: Airport Marina Hotel, Burlingame, Calif.

Tentative Schedule of Activities

THURSDAY, MARCH 17TH

9:00- 5:00	Registration desk and Ladies Hospitality Room open
9:00- 1:00	Committee meetings
1:00- 5:00	Exhibitors set-up
1:30-2:00	Opening remarks, Steve Fischer, Convention Chairman and 1977 President
2:30	Make-up demonstration in Ladies Hospitality Room
6:00- 7:00	Exhibitors cocktail party
7:00- 8:00	Buffet dinner at hotel

FRIDAY, MARCH 18th

8:00- 5:00	Ladies Hospitality Room open, Exhibits, and registration open
8:00- 8:30	Coffee and donuts with Exhibitors
9:00- 2:00	Ladies sightseeing tour of San Francisco, with lunch at Sabellas on Fisherman's Wharf
9:00- 3:00	Men's field trip to U.S. Geological Survey followed by lunch and guest speaker from U.S.G.S. at Airport Marina Hotel
6:00-11:00	EVENING SOCIAL: Dinner and horse races at Bay Meadows Turf Club

SATURDAY, MARCH 19TH

8:00- 5:00	Ladies Hospitality Room open
8:00-12:00	Exhibits and registration open
8:30-10:00	**TOPICS CONSIDERED FOR DISCUSSION:** (1) Record map #1 (2) Record map requirements (3) Drafting techniques and substitutes (4) New methods of coordinating section corners on grade sheets (5) U.S.G.S. Surveyor
9:00- 1:00	Ladies tour of Acres of Orchids, followed by lunch at Kee Joon's Restaurant
12:00- 2:00	Lunch and guest speaker, Mr. Walt Robillard
5:00-11:00	EVENING SOCIAL: San Francisco Ferry Boat ride to Sausalito and Tiburon, dinner location to be decided at a later date.

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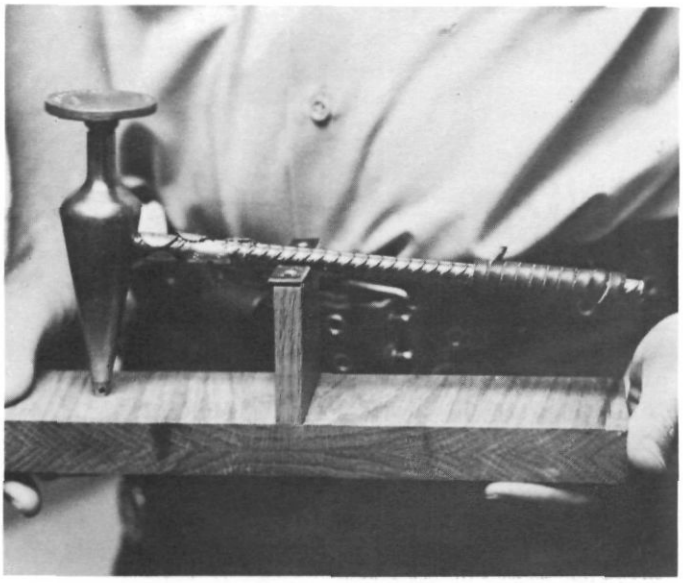
MOTHER LODE CHAPTER GAVELS IN NEW PRES.



In December we gathered, with our wives, at a gastronomic establishment of epicurean delights in Sonora for a generally social meeting. This was of specical significance, in that a new Chapter tradition was created: the passing of a Mother Lode Chapter gavel to the incoming president. This gavel was designed and crafted by the 1975 Chapter President, Robert Hamm of Jackson, CA. The attached photographs show this handsomely original addition to our Chapter held by Kent Schoenenberger of Sonora, the 1976 president. The head is a 16 ounce plumb-bob (suitably earmarked, scratched and nicked from pounding hubtacks) topped with a 2″ brass cap stamped "Mother Lode Chapter C.L.S.A. 1969." The haft is a #3 rebar with the L.S. tags of all past presidents wired to it and a leather chaining thong secured about the end. The stand is fashioned from laminated, hand rubbed native oak. ▲

A THOUGHT

Food for Thought
There's A Hitch To It!

With his thumb, a hitchhiker says, "you furnish the gas, car, attend to the repairs and upkeep, supply the insurance and I'll ride with you. But if you have an accident, I'll sue you for damages."

It sounds pretty one-sided but one wonders how many hitchhikers there are in many organizations and even churches. Many members seem to say, "You go to the meetings, serve on boards and committees, do the paper work, study the issues, contact the legislators and take care of things that need doing and I'll just go along for the ride. If things don't suit my fancy, I will complain, criticize and probably get out and hitchhike to another group."

Hitchhiker or drive . . . which kind of a member are you?

—Sideshots, August 1976 ▲

A CORNER RECORD IS TO BE USED TO PERPETUATE MONUMENTS ONLY

The following are the Board's instructions:

1. This Corner Record is to be prepared by a licensed land surveyor or registered civil engineer and filed with the County Surveyor (or County Engineer) in the county in which the corner is located.
2. A Corner Record shall be filed within 90 days when a corner or corner accessory originally established by official public land surveys of the United States Government has been found remonumented (reestablished—as an obliterated corner), witnessed or used in a survey.
3. The County Surveyor shall examine the Corner Record within 20 days. He shall examine it for conformance with Section 8766, subsection b and c. He shall then file and index this Corner Record after:
   1. He finds that the information is complete.
   2. He finds a disagreement with other record and he has noted the disagreement on the reverse side of the Corner Record.

   He shall notify the surveyor of his action.
4. At the option of the licensed land surveyor or registered civil engineer, a Corner Record may be filed for any property corner, property controlling corner, reference monument, or accessory to a property corner, when none of the conditions requiring a record of survey is required as outlined in Section 8762.
5. Corner identification should be by the Bureau of Land Management marking system, as outlined in the "Manual of Surveying Instructions" (Section 4-23 through 4-45 in the 1973 manual). (Section 259 through 280 in the 1947 manual)
6. Perpetuation of monument to be filed on a Corner Record form shall be those monuments set to replace existing or obliterated corners as identified in Sections 348 through 358 of the "Manual of Surveying Instruction, 1974" or Sections 5-4 through 5-19 of the "Manual of Surveying Instruction, 1973." The location and restoration of lost corners shall be shown on a record of survey in accordance with Section 8764.
7. California Coordinate System data may be included only when readily available.
8. A sketch showing reference ties to identifiable objects in the vicinity of the corner shall be provided when appropriate. Photographs or topo of the monument and general area, etc., are also encouraged.
9. Only one corner shall be included on each Corner Record. Accessories to a corner, may be included on the Corner Record for the subject corner.
10. A Corner Record is not required but may be filed to show its physical condition when: a) a Corner Record is on file and the corner is found as described in the existing Corner Record filed; b) all conditions of the statutes are complied with by proper notation on a record of survey map, subdivision map or parcel map filed after January 1, 1974. ▲

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LEGISLATIVE COMMITTEE REPORT

(Continued from page 2)

fessional engineer registration, are exempt from this division of the examination.

The second division of the examination shall test the applicant's ability to apply his or her knowledge and experience and to assume responsible charge in professional practice of land surveying.

SEC. 2. Section 8742 of the Business and Professions Code is amended to read:

8742. The educational qualifications and experience in land surveying, which an applicant for the second division examination shall possess, shall be not less than the following prescribed minima:

(a) Graduation from a four-year curriculum with an emphasis in land surveying approved by the board or accredited by a national or regional accrediting agency recognized by the United States Office of Education at a postsecondary educational institution and two years of actual experience in land surveying, including one year of responsible field training and one year of responsible office training; or

(b) Actual experience in land surveying for at least six years, including one year of responsible field training and one year of responsible office training.

One year of postsecondary education in land surveying shall be counted the same as one year of experience in land surveying up to a maximum of four years provided: (1) the applicant has graduated from the course in land surveying, and (2) the curriculum in land surveying is approved by the board or is accredited by a regional or national accrediting agency recognized for the purpose by the United States Office of Education. Each year of study in an approved or an accredited course in land surveying without graduation shall be counted the same as one-half year of experience.

(c) Each applicant claiming equivalent credit for education may be required to produce a complete transcript of all college level courses completed. ▲

RESTORATION OF LOST OR OBLITERATED CORNERS AND SUBDIVISION OF SECTIONS

A *supplement to the Manual of Surveying Instructions*, containing a discussion of practices followed by the Bureau of Land Management, prepared especially for the information and guidance of county and local surveyors.

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Projects bigger than both of us
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Exchange of ideas—Field and office procedure
Educational programs
Fellowship
Work shops
Benefits of others experiences

State Level

Legislation—monitoring and sponsorship
Convention
Education
California Surveyor
Collection agency
Unity in metrication
Membership in League of California Surveying Org.
Work shops and seminars
Inter-relationship of local chapters
Promotion of the Land Surveyor

CRUISE-WORKSHOP QUESTIONNAIRE RESULTS

In the SUMMER EDITION of The California Surveyor, a CRUISE-WORKSHOP QUESTIONNAIRE was printed. A request was made . . . "Please fill out and return the questionnaire, so the Education Committee can make a determination."

In answer to this request, 14 questionnaires (out of a mailing list of approximately 3,000) were returned. There were 13 YES answers to have a CRUISE-WORKSHOP (26 people). One person stated that he would attend the WORKSHOP, but would rather have the Cruise as a Convention. There was one NO answer—the person stating that he, also, would rather the Cruse be as a Convention. Many thanks go to those that took the five or ten minutes to answer the questionnaire.

If anyone else is interested in having this CRUISE-WORKSHOP, return the questionnaire before October 25, 1976. If 100 (approximately) people are interested, then this WORKSHOP will be planned. ▲

NEWS BRIEFS . . .

. . . George Ross Armstead, L.S. 2765, was named as the first Life Member of C.L.S.A. by a unanimous vote of the Board of Directors.

. . . The Fall C.L.S.A. Board of Director's Meeting will be held in Newport Beach and will be sponsored by the Orange County Chapter. ▲

LAND SURVEYING A VERSATILE PROFESSION

(Continued from page 1)

location, necessitating expert analysis express the versatility of the professional performance demanded of the Land Surveyor.

Research

The first task assumed in a project is gathering information. The general nature of the problem, instructions from the client, physical examination of claimed or desired boundaries, give a base of operation. Data must be obtained covering older surveys, deeds, maps, field notes, verbal testimony, Court decisions, tax descriptions, title guarantees or policies, local practices of location and monumentation, topographic photogrammetric, or other matters available for relocation.

Aggregation of such material and comparison of facts, both chronologically and physically, together with compiled maps (work sheets, including overlays), will develop a working plan which can easily be followed in the field, and the results projected on other work sheets. The analysis and final decision may then be made and the project completed.

Relocation of boundaries not defined or created by the Rectangular System such as Ranch, Grant, or Subdivision, is generally simpler and less complex but still requires careful and complete examination by the Surveyor.

A stake set on the assumption it is a position of a ''lost'' corner, makes a heap of trouble if some more enterprising and careful searcher finds the original ''lost'' corner.

The big problem in subdivision boundary is accurate location of adjoiner areas and title lines; this is necessary for safety in ownership, specific allocation of taxes, assessment limits and road alignments and dedication. Every lot within the subdivision, and especially those on the boundary lines, are affected by any change or error in the exterior boundary. The map should be precise dimensionally and the field survey should traverse well within the limits of standards. The accuracy of field measurements and the corresponding dimensions of the map, derived from balancing the field traverse, will permit a legitimate use of prorating for unset or destroyed corner, and will allow title insurance to accomodate.

Caution!! City center lines are located to fix the position of the area or strip accepted or assumed for public use, and may not be the center lines of the streets dedicated for such use by the subdivider. Survey will show whether the City lines are concident with Subdivision lines or not. Many center lines split curbs rather than follow property stakes. If a street is widened on one side, the ''center'' line loses its name and becomes either a ''transit'' line or an ''offset'' line. Many descriptions are misconstrued by ignoring these distinctions.

Subdivisions or even acreage parcels in Sections require the same care in location of section or ''subdivision of section'' boundary, and particular attention must be paid to the description. ''The N 40 ac. of the W. 80 ac.,'' is not the same as ''the NW¼ of the SW¼ of a section,'' except in theory; the manner of location differs and the descriptions are not interchangeable for title or conveyancy accuracy.

Although the basic plan of the Rectangular System as defined by the laws creating it is Geodetic, the development as provided in the Manuals, except for the boundaries of Townships, is primarily and practically Planimetric.

The Manual refers indiscriminately to methods and usages of both systems without distinction. Particular care and analysis are needed to interpret the Field Notes and Plats to make proper application of the dimensional data therein.

Mapping & Description

The survey and monumentation of a parcel of land furnishes visible evidence of claim and ownership, but the Surveyor's work is not completed until proper maps and descriptions confirming such evidence are prepared, approved, and filed for record in a public depository. Thus the maximum measure of position maintenance, security, and perpetuation, is obtained for those often slippery changing physical boundaries.

Usual mapping practice is often incomplete and uninformational, showing area boundaries by dimension only, occasionally noting a pipe or stake, no identity, an adjoining street with maybe a distance to a block corner, a North point, scale and surveyors' name, possibly a fancy title and of course the all important (?) acreage correct if the survey is correct and traverse closes (?).

In addition to good drafting and the notation of bearings and distances on boundary, there are other vital items such as deed references to associate data of land of adjoiners; any conflict or gap with adjoining property; building or other structural overlap or encroachments; description of all monuments found or set, with notation ''found'' or ''set,'' as the case may be; designate by note the monuments used or accepted as specific corners of adjoiner areas; show and tie any object of monument

(Continued on page 20)

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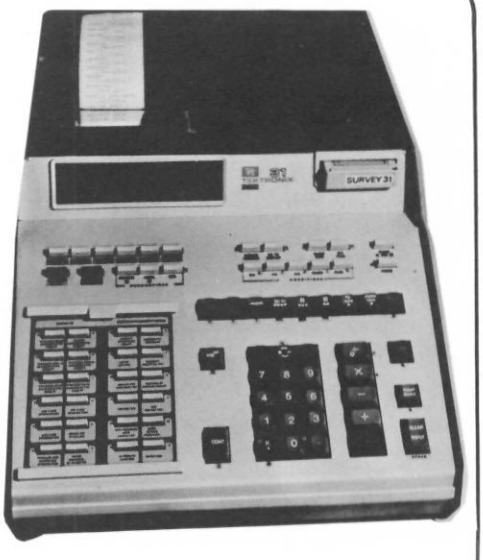

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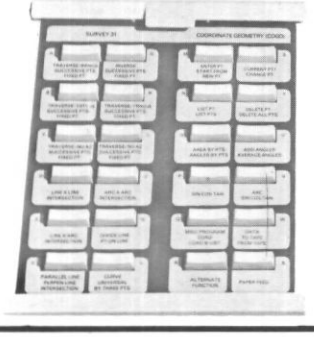

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RADIUS?
          150.
DELTA?
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LENGTH
       84.4630
TANGENT
       43.3839
CHORD
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EDITORIAL COMMENTS

Editor's Note:

For those surveyors who still doubt that their profession is in jeporady, take note of the following letter from the Chancellor of the University of California, Berkeley. It clearly points out the hurdles placed in the way of improving the professional status of land surveyors.

Mr. Donald R. Wright
Board of Registration for
Professional Engineers
1006 Fourth Street, Sixth Floor
Sacramento, California 95814

Dear Mr. Wright:

I referred your letter of September 22, 1975, concerning accreditation in Land Surveying to the appropriate faculty groups in the College of Engineering.

After careful study, the faculty advised me that the University of California, Berkeley, offers a program of study which meets all but two areas of the minimum curriculum proposed by the Ad Hoc Committee for Land Surveying Accreditation of Curricula and Curricula Study. One area not covered is the area of gravimetric surveying, and in our faculty's opinion this area is not important to a land surveyor. The other area is under the listing of Boundary Surveying. Under this heading is property and boundary law and real estate law which can be obtained in the School of Law (Law 203A-203B). Control surveying can be obtained in Civil Engineering 100, and sub-division and land development planning can be obtained in the many offerings of City and Regional Planning in the School of Environmental Design. The parts having to do with evidence and evaluation (as applied to boundaries) and public land surveys are not offered on the Berkeley campus.

We have not developed a strong program in the field of boundary surveying because the State Registration Act permits a registered civil engineer to perform any type of surveys including boundary surveys. Since the State of California permits a registered civil engineer to engage in boundary surveying activities and the Department of Civil Engineering produces graduates who can pass the examination required for civil engineering registration and since that examination requires no knowledge of boundary surveying, the faculty in Engineering has not believed that it is important to provide instruction in boundary surveying per se. All other items in the "minimum curriculum" are covered thoroughly in either required undergraduate courses, technical elective courses or graduate courses. In addition, material in depth is presented covering error propagation and the theory of adjustment based on sound statistical analysis which is considered to be an essential part of the education of a professional surveyor-geodesist-photogrammetrist.

I am listing below for your information the courses offered in the field of surveying together with the number of contact hours in each course:

CE 10 (60 hours)
Engineering Survey Measurements
CE 100 (60 hours)
Control Surveys
CE 101 (60 hours)
Elementary Photogrammetry
CE 102 (60 hours)
Route and Construction Surveying
CE 105 (30 hours)
Higher Surveying and Geodesy
CE 107 (60 hours)
Air Photo Analysis and Interpretation
CE 287A (60 hours)
Analytic Photogrammetry
CE 288A (60 hours)
Analogue Stereorestitution Instruments
CE 288B (60 hours)
Stereotriangulation
CE 289 (60 hours)
Adjustment Computations

It is believed that these courses adequately cover the field of surveying in its most modern, up-to-date mode with the exception of boundary surveying.

I very much appreciate your calling the matter of accreditation in Land Surveying to our attention. I believe, however, that as long as the State Registration Act permits a registered civil engineer to perform all types of surveys and our Department of Civil Engineering graduates continue to be able to pass the examination for civil engineering registration, we do not have the financial resources to underwrite a program specifically designed for accreditation in Land Surveying.

Sincerely,

Albert H. Bowker
Chancellor ▲

GEORGE IS DEAD!!!

He was killed by overwork. Everyone has been letting George do it. As hard as he worked and tried, he couldn't do it all.

If we had all done our part, it would have been a lot easier for George.

Now that he is gone, we all have to chip in with our share of time and money to do our part.

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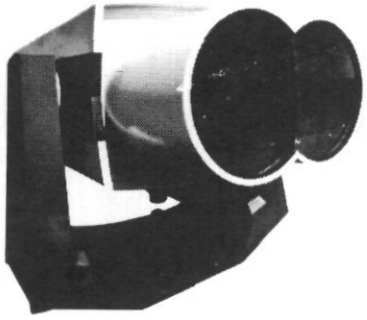

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Wild T2 Theodolite	20.00	240.00
Wild T3 Theodolite	35.00	350.00
Lietz B-1 Level	3.50	70.00
Wild Automatic Level	15.00	150.00
Zeiss Level	15.00	150.00
American-Paulin Altimeter	4.00	70.00
American-Paulin Barograph	15.00	150.00
Wild DI-10 Distomat	25.00	400.00
Tellurometer CA-1000	50.00	500.00
Triple Prism reflector assembly	3.75	65.00
Hewlett Packard 3810A Total Station	120.00	1200.00
Cubitape (DM-60)	25.00	450.00
Cubic-Electrotape (DM-20)*	40.00	500.00
Cubic-Autotape (DM-40)*	250.00	3500.00
Cubic-Autotape (modified DM-40)*	300.00	4500.00
Cubic-Autotape (DM-40A)*	600.00	8000.00
Cubic-Autotape (DM-43)*	1060.00	10600.00
Autotape Printer (2 range)	15.00	300.00
Autotape Printer (3 range)	50.00	500.00
Motorola Mini Ranger*	200.00	3500.00
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(hyperbolic chain)*.**	350.00	3500.00
EG&G Mark 1-B Side Scan Sonar*.**	500.00	4000.00
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TITLE TIPS

Prepared by the Legal Staff of
Title Insurance and Trust Company

MEANDER LINES

By Andrew S. Leerskov, Senior Associate Counsel

The subject of this Title Tip will be, as perhaps suggested by the title, the location of the boundaries of real property at points where it may touch a water boundary. The purpose of this Title Tip will be to acquaint you with the words "Meander Lines" and to discuss one or two cases touching upon Meander Lines, but not to decide the issue.

A recent publication namely "Odgen's Revised California Real Property Law, Volume 2," recites "the words 'Meander Lines' standing alone are ambiguous and might mean either the winding line along the shore or surveyed straight lines between fixed points. California Courts, however, have been consistent in using the words to mean the surveyed lines rather than the actual shore line." Several cases are therein quoted in support of that statement. One of those cases namely *Marks vs. Whitney,* 6 Cal. 3d 251, contains a statement that appears to be inconsistent with the last quoted statement. It might be well, therefore, for us to examine the facts of the Marks case to see if we can distinguish it. That statement, found in the Marks case at page 264, is as follows: "Where a Meander Line is used, the actual location of the line of ordinary low water and not the calls is controlling." Very little of the original words of the grant have been given in the Marks case but enough have been given for us to note a distinguishing characteristic. Again at page 264, the Court states: "The retention of the words 'along the line of ordinary low water' in the description in the decree would have been more explicit and would have avoided some of the problems encountered on the appeal. The failure to include those words however does not refute the fact that the judgment described a natural monument, i.e., 'the line of ordinary water'." From that quote it appears clear that the original grant to one of the parties described the Meander Line in question as being "the line of ordinary low water." From that we learn another rule which must govern the location of lines, namely intent of the parties. Again quoting from Ogden's Revised California Real Property Law, Volume 2, page 1240, we read "it has been held that if the intent of the boundary description was to follow a shore line—even though the boundary is described by courses and distances—the boundary is, in fact, the shore line and not the artificial or the Meander Line defined in the description. The same rule applies if a patent or conveyance purports to follow a shore line and the description attempts to define the line by courses and distances."

The above will serve to acquaint you with some of the problems title companies run into in interpreting descriptions. In making the interpretation, however, many other things must occasionally be considered. For example, Civil Code, Section 830 dealing with grants of land bordering on waters provides "Except where the grant . . . indicates a different intent, the owner of the upland, when it borders on tide water, takes to ordinary high water mark; when it borders upon a navigable lake or stream, where there is no tide, the owner takes to the edge of lake or stream, at low water mark; when it borders upon any other water, the owner takes to the middle of the lake or stream." That section would seem to indicate, for instance, that land bordering upon a navigable lake where there is no tide would take title to the low water mark. It would seem however that we cannot rely upon that statement completely. For instance in *Gion v. City of Santa Cruz,* 2 Cal. 3d 29, 42, the Court states: "among the statutory provisions favoring public ownership of shore line areas is Civil Code, Section 830. That section states that absent specific language to the contrary, private ownership of uplands ends at the high water mark. The decisions of this Court have interpreted this provision to create a presumption in favor of public ownership of land between high and low tide." It would seem from that quotation that the ownership of land between high and low water marks may be questionable. The point I am trying to make now is that when the intent of the description, Meander Line or otherwise, calls to the shore line of a water area, title may stop at the high water mark, regardless of the Meander Line used in the description. In other words we must consider the difference between private rights and public rights.

This Title Tip started out to simply acquaint you with the words "Meander Lines." However, as you can see, many other factors must be considered when dealing with water boundaries. Among the rules not mentioned so far is the substantial evidence rule. Speaking of "substantial evidence" the Court in *People v. Bassett,* 69 Cal. 2d 122 said: "we emphasized in *Estate of Bristol,* 23 Cal. 221, 223, that: 'the critical word in the definition is 'substantial'; it is a door which can lead as readily to abuse as to practical or enlightened justice.' Seeking to determine the meaning of 'substantial' in this connection, the Court in *Estate of Teed,* 112 Cal. App. 2d 638, 644, canvassed dictionary and judicial definitions and concluded that the term 'clearly implies that such evidence must be of a ponderable legal significance.' Obviously the word cannot be deemed synonymous with 'any' evidence. It must be reasonable in nature, credible, and of solid value; it must actually be 'substantial' proof of the essentials which the law requires in a particular case." You can see from that we can always have problems in determining what the surveyor's or grantor's intent was. As I stated at the outset of this Title Tip, it is not my purpose to determine the location of boundaries with respect to Meander Lines. It was my purpose merely to acquaint you with some of the problems involved. I believe I have accomplished that purpose. ▲

"Proof of Permissive Use—Civil Code Section 813"

by Michael B. Kolley, Associate Counsel and
James T. Straw, Law Clerk

A property owner may desire to grant an individual or the general public permission to use his property and seek an effective means to prevent the user from acquiring a prescriptive easement. Prescriptive rights can be acquired when the adverse claimant makes out a prima facia case; showing open, notorious, hostile continuous use for the statutory period of five years. It is then incumbent upon the property owner to either disprove these elements, or prove permissive use—the rationale being that there can be no adverse use if there is

(Continued on page 22)

LAND SURVEYING—A VERSATILE PROFESSION

(Continued from page 14)

having pertinent connection with the area in question, into the net of dimensional positioning; topography is essential; record and nonrecord easements affecting the property; street boundaries with ties and references thereto; any other matters necessary to recover or recreate the physical and/or record boundaries. The Title or Caption of the map should be specific enough to identify the general area of the survey and immediate surrounding, but let the map itself identify the particular area of the project. Unless a whole unit is considered and surveyed, the caption may state "—being a portion of the NW¼—," and the body of the map shows details. There will be a North point, a scale drawn or stated, a certificate of survey by the Surveyor, certificates of ownership, taxes, dedications, recording reference and any other matters pertinent for the record. And don't forget a statement of base of bearings; it is as *important as scale of length.*

The value of determination of coordinates for corners and to be shown on map and in description is debatable. If properly done and thoroughly checked for accuracy and refers specifically to the grid monuments and azimuths and lengths both on the map in the description, the information will prove valuable for precise relocation in the event of destruction of the physical monuments. Failure to develop precision loci and correct notation thereof is very dangerous. The use of coordinates, particularly in description is confusing and misleading unless the document shows and states the variance of dimension between the normal and legal measurement planimetrically and the coordinate or geodetic measurements. Coordinates are tools of surveying, not products or results.

The map should be so constructed that the intent to establish the boundaries is clear and unequivocal; the description also should agree fully even though the wording is different in form. Any variation in meaning or substance between word and map will give precedence to map data if it be shown the parties acted with reference to the map. Extraneous or parol evidence may show the contrary if the Court so decides.

Descriptions are the vital contact between the physical boundary and the permanent documentary record. Their value depends on the accuracy and sufficiency therein, clearly defining the intent and design expressed by the physical boundaries giving such recitals, ties, and dimensions which will identify the area in question as parcel distinct and different than any other land area.

In practice, certain form and phrasing is employed, but the essence of specific and unambiguous statement must not be disturbed. Legal terms are to be used with caution and with full understanding of the variance in definition and application of such terms between normal usage and legal interpretation.

Multiple ties or calls, in the attempt to make a corner certain in its association with others, must be used with caution and with particular note of precedence of the call; otherwise the uncertainty of the corner will be greater than its certainty.

Dimensions without qualification are dangerous because of uncertainty of measurement practices, disturbance or shift in monuments, and destruction of them. If there are no record adjoiners of the area, the given dimensions may become definitive providing the traverse of boundary is correct and no accidental error appears; in such instance proportion may be used in retracement for missing corners between existing monuments.

The base or unit of dimension must be definite and common to all measurements of the survey, except that reference or possible use of the terms of another system must be clearly shown and proper coordination developed in that change.

Survey of a specific area can not be made without a description written, sketched, or verbally stated. Relocation must be preceded by a description in some form and be dependent thereon; it follows, then that the more particular the description the safer the interpretation and the more accurate the relocation.

Record

The perpetuation of boundary is a double issue, the maintenance of physical monumentation, and the creation of documentary record made available to any interested party.

Because of impermanence of physical monuments in spite of efforts to protect and reference, the method of the written record is safer and more lasting, providing such records are accurate and conformable with the physical location, and providing such records are maintained in a public depository. Such records allow the relocation and reestablishment of the physical positions of the boundaries regardless of natural or artifical disturbance.

It is possible to create and perpetuate a specific boundary in an area without any field monumentation. With the record data of such boundary, a correct survey and placement of line and corner monuments may readily be made.

A sound and well determined record seldom needs further research except for items affecting the vicinity recorded subsequent to the senior record.

An accurate record for an area with physical boundaries existing and in place, requires a full field survey, necessary research for verification, a correct description and map, and recording in a public office.

Title

Ownership and transfer of land area is generally identified and supported by a properly recorded map and/or description, together with legal documents carrying such data or reference thereto, and such other matters that are pertinent to the transaction, such as encumbrances, leases, easements, vested interest, etc.

As a financial safeguard and for claim of title protection, the ownership may carry Title Insurance, a form of policy issued by Title Companies insuring the owner, or other interests, as to the sufficiency of those matters affecting the described property, noting exceptions if any, of items or areas adversely affecting or lying outside the title of the vestee even though *within the description area of insurance. Exceptions may cover* Roads granted in fee to the public, ground water or water service equipment of a Service company, mineral rights, areas already passed from ownership of the vestee, infringements of adjoiners, or other items affecting title.

Because of the insurance risk or of matters affecting the transfer of ownership or encumbrance, a title policy may use a different description than the one submitted for insurance. This is done to modernize or correct an erroneous original descrip-

tion, or eliminate recital of unwanted or uninsurable areas. The surveyor must be aware of such changes and reasons therefor, and act accordingly in his survey or new description. He must adjust his work to conform with the desire of his client as far as legal and title interpretation will permit.

Interpretation

A Land Surveyor is not a lawyer or a Court and therefore barred from drawing conclusions as a witness. He is a fact finder and his privilege is to demonstrate by testimony, description, and delineation, his opinion, and reasons for the course and positions considered in his investigation. The Court's decision or the Title Company's willingness to insure rests on favorable acceptance of the demonstrated accuracy of the Surveyor's fact showing, and the consistency of his explanation or conformity with legal and title principles.

Such facts and opinions are acceptable and successful only when the research is exhaustive, the analysis thorough and interpretation corroborative.

These terms define procedures of boundary and corner determination on the ground either prior or subsequent to the research of the record.

Location involves discovery of original monuments of verifiable replacements, in original and undisturbed position.

Relocation involves remonumentation or realignment of boundary in substantial conformity with record position.

Procedures in both instances require intense examination and search for signs of the original work, using every artifice from pick and shovel to statements of knowledgeable parties, to "following the footsteps" of the original surveyor by way of his notes, maps and reference ties, then follow with a critical analysis of the facts discovered to determine a position most nearly conformable with the record.

The use of photogrammetric arts in vertical, slant, scale, mosaic photos; adaptation of topographic maps and calls in notes as accessory items of location; USGS quadrangle maps and Township Plats (if the area has been sectionized) also help.

Familiarity of methods of the original Surveyor in his line running, monument building and compilation of field notes into the required form of the Manual, often give a hint as to any irregularity or error existing between the actual original work and the final record as presented for approval.

The requirement of the Manual as to use of standard form of presenting notes and plats creates, on occasion, certain variances and distortions which arise in the necessity of performing the original ground work in a different manner than standard; although the Manual provides for showing such variances, it is rare to find any reference to more than token use of such provision. Original, unsubmitted field notes, well informed testimony, and known pattern of performance of the original surveyor will aid in discovery of monument positions.

Relocation of Section lines and Corners is regulated by provisions of the Manuals of Instruction issued by the Bureau of Land Management. For special problems, additional or particular instructions are issued supplementing or supplanting the Manual.

Resurveys or retracements made by the surveyors of the Public Survey Office are bound by Manual and supplemental provisions. Surveyors in private practice are not bound to follow strict procedures, but the location of a corner position which has not been monumented (the center of a section for example) must be made under Manual rules. If relocation according to original survey is the problem, the approved Field Notes and Plat must be followed as closely as possible in harmony with actual field data. If retracement is involved, the rules of the Manual should be followed in compliance with the Manual of the era and year in which the original survey was made, since there have been changes in regulation from time to time. State law and Court decision may affect the Manual provisions. If the survey instructions require a location of existing monumentation per se, the surveyor must for his client's and his own protection, develop and position and correlate the physical existing monuments, the original corners or positions, the relocation positions as determined by survey and analysis and conformity with legal principles, and positions acceptable to Title practice.

Methods of Restoration of Lost and Obliterated corners as defined in the Manual must be examined critically before adopting. The definitions of "lost" corner "obliterated" corner, etc. are not fully supported by the rules given for restoration. The proportion method appears to be applicable to nearly all cases of missing corners or positions; strict interpretation indicates the only uses of proportion are in case of placement under circumstances where there is NO other means of determining a reasonable or logical position, or use in office examination of dimensional relations between known and unknown positions. Error in field or office is NOT proratable.

The versatility of procedures, and necessity of correlating old records and practices with modern usage, legal and title

(Continued on page 22)

TITLE TIPS PREPARED BY THE LEGAL STAFF OF TITLE INSURANCE AND TRUST COMPANY

(Continued from page 18)

consent.

In proving the positive grant of permission the property owner had some difficulty prior to the enactment of Civil Code section 813. If he had granted a revocable license—it could be repudiated. If he had posted signs pursuant to Civil Code section 1008 ("Right to pass by permission, and subject to control by owner. . ."), he might have a difficult time proving the date that they were posted or that the user actually saw them. In 1963, the California Legislature provided the property owner with a means of escaping this evidentiary tangle through the recording process.

Originally, Civil Code section 813 was designed to provide mere evidence of the date and the extent of the permission granted by the landowner—utilizing the county recorder's office to put less of a burden upon him to prove his consent. In response to the companion cases of *Gion v. Santa Cruz* and *Dietz v. King* (1970) 2 Cal. 3d 29, 84 Cal. Rptr. 162, which established the implied dedication of beachfront property to the general public, the legislature amended Civil Code section 813. Now, upon the recordation of the notice of consent to use land, the notice is *conclusive* evidence of the permissive use of the land in any judicial proceeding concerning dedication or prescriptive rights in that property.

That code provision also sets forth the notice that must be recorded along with the property description. The property owner may provide for reasonable restrictions upon the time, place and manner of public use. If permissive use is granted to someone other than the general public, the notice must be served upon the user by registered mail. Once the notice of consent is recorded, the property owner may not physically obstruct public use of the land until he records a notice of revocation of consent.

The recordation of the notice will not affect rights which have vested in the land; thus, if the statutory five year period has run, it appears that the subsequent recording of a notice of consent will be ineffective against the adverse claimant. However, the Courts have not specifically decided whether the recordation of the notice of consent will stop adverse use prior to running of the five year period, or merely suspend it.

The legislature has insulated the property owner from liability under such a consent to use his land by Civil Code section 846. That section sets forth the parameters of the property owner's responsibilities to those who enter upon his land for recreational purposes with his consent. The property owner does remain expressly liable for: (a) willful or malicious failure to guard or warn against a dangerous condition, (b) to those who enter for a consideration, and (c) to those who are specifically invited upon the land (rather than those who are merely permitted to do so). ▲

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LAND SURVEYING—A VERSATILE PROFESSION

(Continued from page 21)

methods, makes the profession of Land Surveying a complex vocation.

The day of the rule of thumb Surveyor is gone. In his place is the professional Land Surveyor, educated in the principles of modern field and office analysis and practice, use and adaptation of modern equipment, trained in legal and title application to land problems, and able to exercise the faculties of sound judgment and experience.

Summary

The role of the Land Surveyor is most demanding by reason of its scope, variable application of basic principles, and particular attention to analysis and interpretation.

Too much research is hardly possible, but too little is dangerous. Only judgment and experience will determine the proper level. Occasionally, after the preliminary work, more avenues of exploration will appear, sometimes changing the whole complexion of the scheme. After all, the intent of the parties and proper execution of the survey to conform, is the solution sought. ▲

CALIFORNIA BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS

Written Examination Schedule 1976

Examination Dates	*Final Filing Dates
Land Surveyor-in-Training—LSIT	
April 16, 1977	January 31, 1977
Land Surveyor—LS	
November 5, 1977	July 11, 1977

*Applications filed after the final filing date specified will be considered for the following examination.

NOTE: This schedule is subject to change at any time without prior notice. ▲

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Avoid Interrupted Service

Please notify us eight weeks before moving. Place Surveyor address label in the space provided and print your *new* address below.

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P.O. Box 1363
Santa Rosa, CA 95403
Attn: Change of Address

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- ☐ **MEMBER GRADE: Have a valid California Land Surveyor's or Photogrammetric Surveyor's License**
- ☐ **AFFILIATE MEMBER GRADE: R.C.E. or those who rely upon the principles of land surveying.**
- ☐ **ASSOCIATE MEMBER GRADE: Work in land surveying and be recommended by a member.**
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Dues schedule: *Member $50.00 Affiliate $25.00 *Associate $10.00 *Student $5.00 (*Entrance Fee $15.00)

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I authorize charge to my: ☐ Master Charge Account No: _____
Enter 4 numbers which appear on Master Charge card directly above your name

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FIRST YEAR'S ANNUAL DUES ARE TO BE PRO RATED FROM DATE OF APPLICATION

CALIFORNIA LAND SURVEYORS ASSOCIATION

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