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Congress on Surveying and
Mapping

The California Surveyor

THE VOICE OF THE LAND SURVEYORS OF CALIFORNIA

No. 29

SUMMER EDITION

1973

SURVEYOR OF THE YEAR

by Roy Watley, Jr., L.S.

Professor Edward F. Kulhan received an award as the California Surveyor of the Year of 1972, at the C.L.S.A. convention held last February in San Jose, for his outstanding contributions in land surveying.

Professor Kulhan was instrumental in obtaining the first Bachelor of Science degree in Surveying and Photogrammetry to be offered in California. This program, approved by the Chancellor of the California State University and Colleges in September, 1970, provides students with advanced training in theory and applied techniques of topographic, geodetic, cadastral, photogrammetric, and engineering surveying. The surveying profession has given this program its strongest support and maintains close contact with the students. There is a student chapter of the California Land Surveyors Association.

Edward F. Kulhan was born March 31, 1915. He received a Bachelor of Science degree from the University of Nevada in 1939. In 1953, he received a Master of Science (Surveying) degree from Pennsylvania State University. Prior to teaching at California State University, Fresno, Professor Kulhan was an instructor at Pennsylvania State University from 1951 to 1956. He also wrote an article entitled "Teaching Photogrammetry on a Shoestring," which appeared in the 1968 *Proceedings of the American Society of Photogrammetry*.

Professor Kulhan spent some time in the summer of 1967 with the Army Map Service, in Washington, D.C., updating in all phases of mapping and mapping equipment. He devoted a sabbatical leave to visiting Engineering Colleges and Technical Schools in Europe, for the purpose of studying their curriculums in surveying and mapping and their equipment and facilities for training, and comparing these with those of similar schools in this country. During his tour he visited Trinity College in Dublin, Ireland; the University of Glasgow,



*Land Surveyor of the Year
Edward F. Kulhan presented by C.A. Wooldridge*

Glasgow, Scotland; University College, London, England; Royal Technical Institute, Stockholm, Sweden; Berlin Technical University, West Berlin, Germany; Prague Technical University, Prague, Czechoslovakia; and many others.

The descriptions of the courses and training in surveying and mapping offered by the European schools visited by Professor Kulhan indicated that their graduates in surveying and mapping are better trained for the practice of their profession than are ours.

Professor Kulhan is licensed as a Land Surveyor in Pennsylvania as well as California. He is a member of the California Land Surveyors Association, American Congress on Surveying and Mapping, American Society of Photogrammetry, American Society of Civil Engineers, American Society for Engineering Education, and the California Society of Professional Engineers. Continued on page 4

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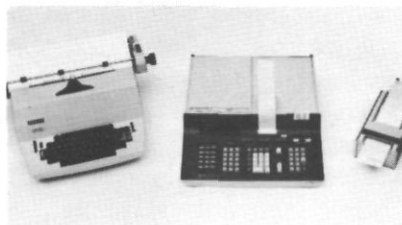
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BOARD OF DIRECTORS MEETING

by Harold B. Davis, L.S.
Secretary-Treasurer

The Board of Directors met at the Hyatt House in San Jose, in conjunction with the 1973 Convention. The meeting was called to order at 8:00 P.M. by President Eugene Lockton.

The Secretary-Treasurer called the roll, and requested the Chapter representatives to introduce the chapter presidents.

President's Report: President Lockton gave a short dissertation on the aims and goals of C.L.S.A. for 1973.

Secretary-Treasurer's Report: The Secretary-Treasurer presented the budget for 1973, as amended, and explained the spending proposal. The budget was approved as presented.

Education Committee: Hal Walker, Chairman, presented a request by the Board of Registration regarding C.L.S.A. ideas relating to accreditation of 2 and 4 Year surveying programs. He gave a short talk on the goals of the Education Committee, and requested that any person interested in this committee contact him.

Legislative Committee: Fred Kett, Chairman, reported on the activities of this committee during 1972, and the goals for 1973. He requested input to this committee from Southern California, as that section of the state has the greatest number of legislators.

New Business: President Lockton requested questions and comments from the floor. Larry Cloney made a motion that the general membership be allowed to address the chair and board, relating to the change in direction or the Legislative effort. Motion seconded. President Lockton then threw the discussion open to the membership. Don Holcome stated his feeling that the Board may not have followed the wishes of the general membership, and proposed that the Board conduct a poll. President Lockton stated that a poll might be an exercise in futility. Ray Burgess stated his agreement with the Board's position, as he feels that the problem must be approached from the political standpoint, and try finesse. Dave Roberts, Chairman of the coordinating committee, reminded the membership of the several means of internal communication, and requested that the members use these avenues. A general discussion then followed relating to the change in direction.

There being no further business, the meeting adjourned at 9:15 P.M. ▲

BOARD OF DIRECTORS MEETING

by Harold B. Davis, L.S.
Secretary-Treasurer

The Board of Directors met at the Rodeway Inn in South San Francisco, on April 28, 1973 at 10:05 A.M. President Lockton commented on the operations of the Association. The Secretary-Treasurer's report was approved, showing total expenditures to date of \$5665.95 and a total cash balance of \$9631.89. The Executive Secretary reported on the membership, giving the total membership of 386 with 60 student members. Of these 33 and 28 students have joined since January 1, 1973.

ATTENDANCE

President, Eugene Lockton	Present
Vice-President & Executive Secretary, James E. Adams	Present
Secretary-Treasurer, Harold B. Davis	Present
Immediate Past President, Charles A. Wooldridge	Present
Director, Homer Banks, Jr.	Present
Director, Robert L. Carpenter	Present
Director, Lawrence J. Cloney	Present
Director, A.E. Griffin	Present
Director, Paul W. Lamoreaux, Jr.	Present

Chapter Representatives

Bakersfield, Donald E. Ward	Present
Central Coast, Robert Leger	Present
East Bay, Roy Watley	Absent
East Bay, Roger Swink	Present
Eastern Sierra, Bob Baron	Absent
Feather River, Jack Ashbaugh	Present
Lake Mendocino, Joseph Scherf	Present
Monterey Bay, James M. Prendergast	Present
Marin, George Colson	Absent
Mother Lode, Frederick W. Kett	Present
Northern Counties, Kenneth G. Burton	Absent
Sacramento, Dan Radman	Absent
Sacramento, George W. Bridges	Absent
San Fernando Valley, Leonard Lindenbaum	Present
San Joaquin Valley, William O. Gentry	Present
Santa Clara-San Mateo, Hank Young	Present
Santa Clara-San Mateo, George T. Stock	Absent
Santa Clara-San Mateo, Charles Randall, Jr.	Absent
Sonoma County, Rodney Pitts	Present
Tahoe, Jerry W. Tippin	Absent

Non-Voting Members and Guests

Don Bender
C.N. Hathaway
John Pedri

Fred Kett reported for the Legislative Committee. This committee also reviewed 200 bills relating to the profession, with 43 being of major interest. This committee has sponsored legislation, AB 1272, relating to access to private land, and another on corner recordation.

Larry Cloney reported on the Nominating Committee, with a proposal for major alteration to the Constitution and By-Laws. The board discussed these proposals at length, and returned them to the committee for further study. Larry will be attending several chapter meetings in the next few months to get feedback from the total membership.

Don Bender reported on the Status Improvement Committee. In his research Don has discovered various publications printed by government relating to jobs and trades. One of these, published by the State of California, Department of Human Resources, is called "Occupational Guides." There is one of these guides for about every profession in California, except for Land Surveying. Don has contacted the Department in this regard, with some hope of getting the oversight rectified. President Lockton is going to communicate with the

Continued on page 9

C.L.S.A. SEVENTH ANNUAL CONVENTION

"Do You Know The Way To San Jose?" – it appears that about 370 people either knew or else found their way to a very successful "Convention '73" at the San Jose Hyatt House this past February. The people attending seemed to enjoy both the technical programs and the many social functions and found the Hyatt House to be a great place for the Convention. The weather cooperated with sunny days (the weekends before and after had rain) and so "a great time was had by all."

The theme of the Convention, "The Land Surveyor – A Professional," was very vividly shown to be true by the guest speakers – for the most part Land Surveyors working in many different areas of our profession. The guest speakers were extremely well received as shown by the attentiveness during the talks, the applause at the end of the talks, and the fact that practically every question and answer period after the talks ran over the allotted time.

Some of the more renowned speakers:

- (1) The Mayor (Norman Mineta) and the Director of Public Works (A.R. Turturici) of San Jose in the opening ceremonies;
- (2) Ray Peters, immediate past L.S. member of the State Board of Registration;
- (3) William J. Jurkovich, President of the State Board of Registration;
- (4) John Pedri, present L.S. member of the State Board; and
- (5) Ed Kulhan, named as Surveyor of the Year for 1972.

The Board meeting at Friday night's dinner was well attended. Most of those there thought the idea of having a Board meeting that the general membership could attend was a good idea, but that it should not be held at a main convention dinner.

Socially, the Convention was a "smashing" success; the highlights on Saturday night were the wine tasting trip to San Jose's own Mirassou Winery and the ventriloquist after dinner. The "dummy" did amaze everyone, as written in prior publicity, with all of his secret knowledge. The laughter was at the top of the scale during the show.

Sunday's final program on America's Space Program was extremely enlightening in regard to how valuable the program really is, showing many areas that do and will benefit Land Surveyors.

The ladies seemed to enjoy themselves greatly. Some of this was due to the following innovations:

- (a) A hospitality room;
- (b) door prizes at their fashion show dinner; and
- (c) cash prizes for their shopping trip.

Some of the exhibitors said this was by far the best convention they had ever attended. There were nineteen paid commercial exhibitors (plus L.A. Scientific had two booths):

AGA Corporation
Brunson Instrument Co.

California Aero Topo, Inc.
Challenge-Cook Bros., Automatic Grade Light of America
Computer Design Corporation
Concap Computing Systems
Cubic Industrial Corporation
Electro Rents
Forestry Suppliers, Inc.
Hewlett-Packard Company
Kern Instruments, Inc.
Los Angeles Scientific Instrument Co., Inc.
Monroe, the Calculator Company
Olivetti Corporation of America
Schonstedt Instrument Company
Surveyors Service Company
Technical Advisors, Inc.
The Lietz Company
Wang Laboratories, Inc.

and two non-commercial exhibitors:

NASA

Fresno State Surveying Students

As best can be determined, the attendance was as follows:

192	Paid Registration
29	Non-paid Registration
83	Ladies
47	Exhibitors
27	Students
<u>1</u>	Child
369	Total

Certainly everyone that participated is owed a great deal of thanks. If there were enough room, then properly everyone's name should be listed, but since there isn't, then at least the groups have to be named and greatly thanked: the Convention Committee, the Hyatt House and its staff, the guest speakers, the exhibitors, the many that donated all the great door prizes, especially Bruce Sumner for getting the Surveyors Compass from the Warren-Knight Company to use as the major door prize, and last, but without which there would have been no Convention – the many members and guests who really made a great "Convention '73." ▲

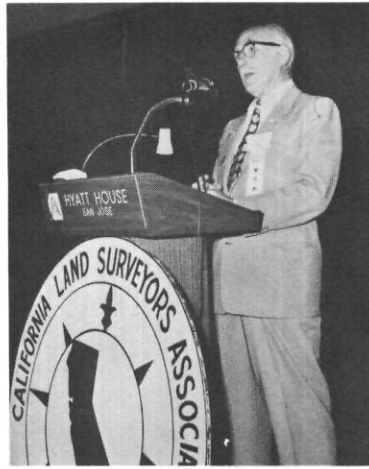
SURVEYOR OF THE YEAR (Continued from page 1)

Professor Kulhan also organized and presented the excellent "San Joaquin Valley Surveyors Conferences" held at California State University, Fresno, bi-annually. One outstanding feature of these conferences has been the tour of surveying education facilities and student projects at California State University, Fresno.

The preceding statements are only a few of the many qualifications and contributions of Professor Edward F. Kulhan in the field of surveying. There is no person more deserving of this award – *California Land Surveyor of the Year*. Congratulations, Professor Kulhan. ▲



Mayor Norman Mineta



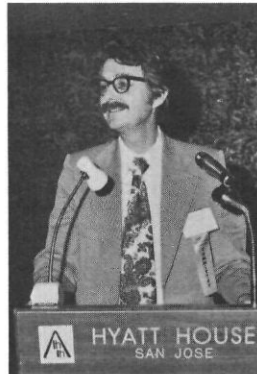
Eugene Lockton, President C.L.S.A.



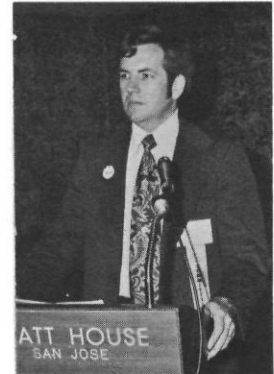
Larry Cloney, Chairman



Thomas Gribbin



Paul Lamoreaux



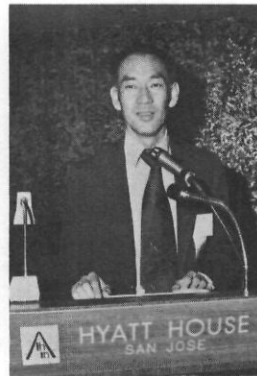
Raymond Thinggaard



Joseph Carey



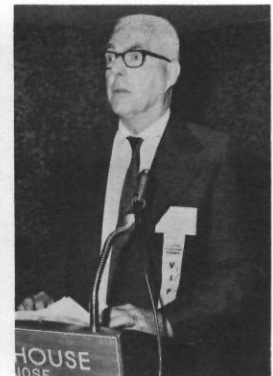
L. Bruce Sumner



James Kor



Harold Walker



Alvin Pond



Gregory Taylor



William Jurkovich



John Pedri



A.R. Turturici



Roy Minnick

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John Pedri, Friend - - - - , Ray Peters

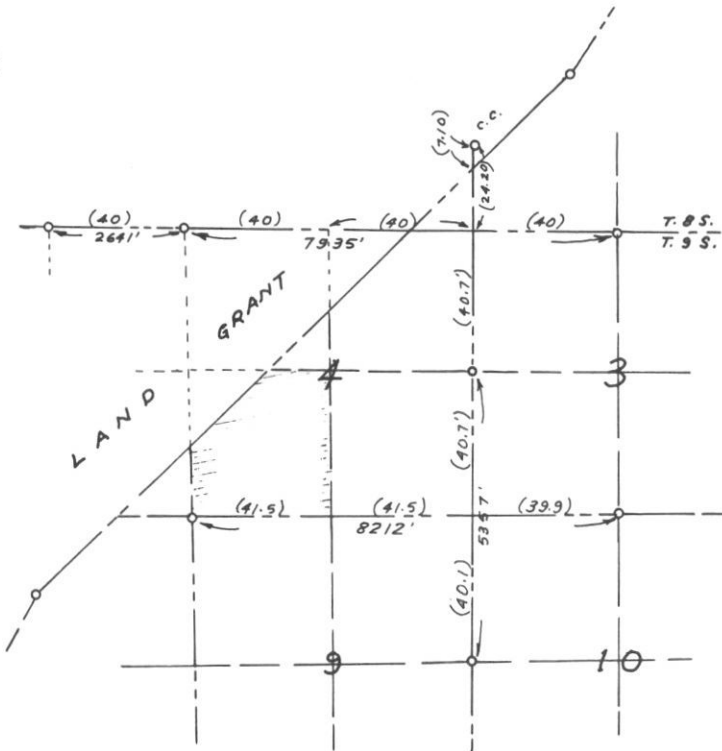


Wes Stallings “... out of plums”



Bruce Sumner and John Pedri



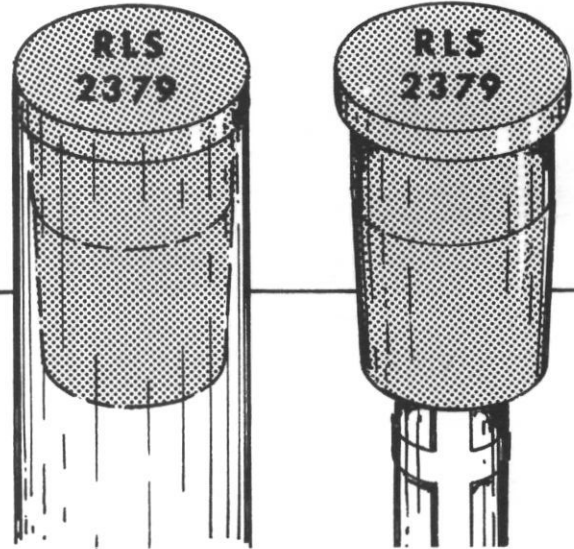


Correct answers were submitted by Gary Carnes, a student at California State University, Fresno, and R.L. Gutherie, L.S.

- (1) Establish the W 1/4 corner by single proportionate measure between the SW corner and the NW corner. Carnes notes that the W 1/4 corner would be set at the midpoint from the information given whereas in most townships this corner would not have been set originally at the midpoint.
- (2) Establish the SE corner by double proportionate measure between the SW corner of Section 4, the S 1/4 corner of Section 3, the E 1/4 corner of Section 9, and the E 1/4 corner of Section 4.
- (3) Establish the S 1/4 corner by single proportionate measure between the SW corner and the SE corner.
- (4) Establish the N 1/4 corner and the NE corner by single proportionate measure between the NW corner of Section 4 and the N 1/4 corner of Section 3.
- (5) Establish the center 1/4 corner by intersecting the line between the N 1/4 corner and the S 1/4 with the line between the E 1/4 corner and the W 1/4 corner.
- (6) The two remaining corners to be set are on the southeasterly boundary of the Land Grant. They are established by intersecting the previously established lines for the SW 1/4 with the line between the two existing corners on the Land Grant boundary.

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TITLE TIPS

Prepared by the Legal Staff of Title Insurance and Trust Company

DESCRIPTIONS REFERRING TO GOVERNMENT SURVEYS

by Andrew S. Leerskov
Senior Associate Counsel

Frequently, of late, the question arises as to the accuracy of government township and section surveys and what insurance is afforded by a policy of title insurance with respect to the same. For instance, suppose title is insured to the Northwest quarter of the northwest quarter of Section (blank), Township 8 South, Range 2 West, San Bernardino Base and Meridian. How many acres of land are thus insured? In the first place, no amount of acreage will be insured unless specifically so stated in the policy. Nevertheless, the insured will normally expect that he has acquired 40 acres. How far can one depend upon this designation? That, of course, will depend upon the accuracy of the government survey.

United States Government surveys control and the section lines, corners and monuments thereby established are conclusive. Frequently the survey is later found to be erroneous in its location of corners and the lines fixed thereby. Nevertheless, these boundaries shown by the last survey before disposition must be accepted as true and cannot be changed by any subsequent government survey (*Lane v. Darlington*, 249 U.S. 331).

A survey of the public lands is the running of the lines, establishing corners, marking trees and other objects, so as to identify the sections on the ground and, in addition, the preparation of field notes of the survey and a plat (*Muse v. Arlington Hotel Co.*, 68 Fed., 638). Such a survey does not become official until the survey notes and plat have been approved and filed with the Bureau of Land Management [formerly General Land Office] (*Cox v. Hart*, 260 U.S. 427), but if it develops, after the survey notes and plat have been approved and filed, that there are conflicts between the plat of the survey and the survey as disclosed by the field notes, the field notes will prevail over the plat in establishing the boundaries of the land (*Harington v. Boehmer*, 134 Cal 196). However, the surveyor as a part of his survey is required to mark or monument the corners of the various sections on the ground, and in some cases monuments were placed also at the quarter section corners of the sections. If there be a conflict between the field notes and the monuments placed on the ground, the field notes will be controlled by the monuments in establishing the boundaries of the section of land.

When public lands are patented or otherwise conveyed by the Federal Government by reference to the plat of an approved survey, such a reference is effective as a conveyance of the parcel of land therein described "as it is shown and marked off on the earth's surface by the last approved Government survey, made and approved before the patent was issued," (*Kimball v. McKee*, 149 Cal 435; *Yolo County v. Noland*, 144 Cal 445), and the position of the lines of such survey on the ground will fix the position of the land patented or conveyed (*U.S. v. State Investment Co.*, 264 U.S. 206). It is

apparent that if the title conveyed to the patentee is limited to the parcel of ground marked off on the earth's surface by the last approved survey on file at the time the patent is issued, he would have no title outside of these lines which he could convey to others by description which might be confined to the lines of the survey, by reference to which his title was acquired.

Since we have established that only the monuments established in the field by the government surveyor have final control over the location of section lines, the question remains as to the liability of the title company. This seems so self-evident that no comment should be necessary. However, to keep the record straight, a standard coverage policy of title insurance insures that the record title to a described parcel of land vests in the named person. Such a policy of title insurance does not purport to be a survey of the land. This is one of the reasons why you will find as an exception in that policy, any matters which a correct survey would show. ▲

CLSA RECOMMENDATIONS ON SURVEYING CURRICULUM AND ACCREDITATION

by Hal Walker, L.S.
Chairman, Education Committee

The following criteria we consider to be a must before attempting to determine accreditation.

1. The school requesting accreditation must offer a degree program in the field of surveying, photogrammetry, or related technology, such as civil engineering technology. This would require at least 10 semester or 15 quarter units per year.

Such programs are currently offered at CSU Fresno, Pasadena City College, Santa Rosa Junior College and several other Community Colleges in California. CSU Fresno is currently the only four year degree program offered in California.

2. Other than basic surveying courses (plane surveying, mapping, route survey, etc.) we recommend the following courses be included in the curriculum of the school applying for accreditation.

Four year: Boundary Law and Principles
 Evidence and Procedures
 Land Planning
 Photogrammetry (including laboratory)
 Surveying Computation (computer programming)
 Real Estate Law
 Report Writing

Two year: Boundary Law and Principles
 Surveying Computations (computer programming)
 Photogrammetry (theory, laboratory not required)
 Report Writing

We strongly recommend a Work Experience program be available, although we recognize that not every student may have the opportunity to participate.

**CLSA RECOMMENDATIONS ON SURVEYING
CURRICULUM AND ACCREDITATION** (Continued from page 8)

3. A full time instructor in the program.

4. In the case of a new program we recommend that no accreditation be granted until after the first graduates have received their degree.

All of the above can be accomplished by the use of an application form to be filled out by the school wishing accreditation and submitted to the Board.

Once a school has met the above criteria a packet containing more detailed forms on curriculum, facilities, faculty, and graduates could be forwarded to the appropriate school to be completed and returned to the Board before the visitation team arrives on campus.

This would allow the visitation team time to review the program prior to their visitation and it would save much time and expense in determining the schools accreditation.

The following is our thoughts and recommendations on topics that could be included in these forms.

Curriculum

1. Detailed course outlines, including units and number of lecture and laboratory hours.

Facilities

1. Sufficient equipment and laboratory space to accommodate the enrollment in the program.

2. Every effort should be made to have equipment that is comparable to that which is used in the industry. It is important that the latest in equipment and technique be available to the student.

3. Laboratory assignments should be as closely related to the problems that are confronted by the surveyor in actual practice.

Faculty

1. Perhaps the most important factor with regard to instruction is the ability of the instructor to generate enthusiasm and knowledge of the profession within the student. This could be evaluated by including in the packet of forms, questionnaires or recommendation forms that the instructor could send to graduates and their employers to complete and return to the Board. Much like the recommendation needed by an applicant for registration.

2. The student-staff ratio is most important in laboratory situations.

3. An "Active" participation of the instructor within the profession and professional societies is a must. Being a member is not enough.

4. Advance degrees and licensing usually indicates a desire to advance within the profession; however, we rate this least important, as it does not always reflect the individual expertises nor his effectiveness as an instructor.

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Mission Bay, San Diego**

Graduates

1. The success of any program is its graduates. There must be a positive effort to develop employable graduates. The use of the above mentioned questionnaire could be a great help in determining the success of the program.

2. Instructors should take an active roll in helping place students upon graduation.

3. The school should conduct follow-up studies to determine how well the graduates have performed or what deficiencies may exist within the program. These studies could be conducted about every three to four years and the result submitted to the Board.

Visitations

1. We rate the visitation to deans and department heads least important. Quite often, unless the programs have administrative problems, the deans and department heads are unaware of the complete success of the program and its graduates.

2. We strongly recommend that the visitation team have at least one license surveyor and an educator who is actively teaching the field of surveying. We are enclosing a list of individuals who have indicated their interest in serving on such a visitation team. ▲

BOARD MEETING (Continued from page 3)

Department, stating CLSA's willingness to provide expertise in this endeavour. Other publications, published by the Federal Government are "The Standard Industrial Classification Manual," "The Occupational Outlook Handbook," and "The Dictionary of Occupational Titles." The latter defines Land Surveyor as a synonym for surveyor, and implies that this is an instrumentman. The Board then adopted Resolution 73-1, stating that the CLSA "will publish and revise from time to time a suggested standard of land surveying titles, experience requirements, and duties for land surveyors and their subordinates."

Leonard Lindenbaum reported for the San Fernando Valley Chapter. This chapter is preparing input for the Board of Registration relative to revision of Rule 424, and has prepared and sent out a questionnaire on professional development. Those interested in this questionnaire are requested to contact Leonard, via the Executive Secretary.

The Board then passed a motion that 1% of each years income be set aside for purposes of emergency nature, to be disbursed at the discretion of the Board.

The Board then passed Resolution 73-2, revising the administrative operations of the association, naming the several committees, and directing these committees to prepare long range programs and goals for submission at the next board meeting.

The meeting adjourned at 3:20 P.M. The next meeting will be held at the Rodeway Inn in South San Francisco on July 21, 1973. All members of the Association are invited to attend. ▲

by Edward A. Boris, Jr., L.S.

Editor's Note: Edward A. Boris, Jr., C.E. Tech II, Alameda Co. Public Works Dept., developed the following programs, using SBC/370, Basic Long Language. Eliud Karundu Ngure, C.E. Trainee, and college graduate from Kenya, checked the programs.

BRIEF SUMMARY OF GEODESY

Geodesy refers average sea surface (Geod) level as its level of reference, which is assumed to extend all around the whole Spheroidal surface-shape of the Earth, placing all the continents above this level. This spheroidal shape is negligible for short distances. In Plane Surveying, on a job which does not need great accuracy, the spheroidal shape can be neglected, but for more accurate work, it cannot be neglected, and all surveys involving distances greater than 10 miles, and work requiring great accuracy, the spheroidal shape must be accounted for.

The U.S. Coast & Geodetic Survey has done Geodetic Surveys of the entire continent basing its Surveys on the sea level. It is a difficult and expensive type of Survey, needing special equipment and specially trained personnel. Triangulation and traverse are the employed methods of surveying. The convenience of triangulation is that, once one side and two angles have been accurately measured, the other sides and angles can be computed in triangulation, a line is selected and considered as a base line, then measured very accurately, ascertaining the accuracy with repeated checks. Then two angles are measured, whose senses of direction are intended to converge and intersect at the desired 3rd point. The distances are then computed together with the third angle.

This triangle is then used as a base for a system of triangles covering greater areas. The distances from one point to another, although they might not have been established by the same triangle, are confined to up to 25 miles, at which the best accuracy is maintained.

By Geodetic Survey mathematical formulae, these distances and angles are reduced to sea level, and the exact positions of points relative to one another on the spheroidal surface are established.

After this, the U.S.C.&G.S. has further established references for all the states called "State Plane Coordinate System." In essence, a plane surface is assumed passing tangentially through a point on the spherical surface of the Earth. The size of the plane, on to which the spherical shape of the part of the Earth is to be projected as a map conformally, is restricted so as to decrease the discrepancies between sizes. Those discrepancies, which cannot be avoided, have constants computed by mathematical formulae to correct them. These formulae are developed from two internationally accepted projections: Traverse Mercator and Lambert Conic Conformal projection. (A plane with 158 miles greatest length gives accuracy of 1 in 10,000).

THE PROJECTIONS

The suitability of a projection for any one state depends upon its greatest length as referenced to North-South or

East-West direction. The Lambert Conic Projection is based on the assumption that, an assumed cone intersects the spheroidal surface of the Earth, and for the Traverse Mercator, on the assumption that, a cylinder, likewise intersects the spheroidal surface of the Earth. For both projections, actual projection is developed mathematically.

Lambert projection is used in areas with longer East-West direction. California, in its entirety has a North-South length greatest, which due to its magnitude, demands further Subdivision, which has been done into 7 zones, with an East-West length greatest. This allows Lambert projection to be satisfactorily applicable. The Formulae for the constants are General, i.e., they are applicable as given for all zones. Difference in any one constant, from one zone to another, is given by the variables: latitude and longitude.

PLANE COORDINATE SYSTEM

For any one plane coordinate system, the cone is assumed to intersect the spheroid at two points. These two points have an obvious one to one conformal representation on the projection, i.e., the point on the Spheroid Surface and the point on the assumed plane are identical. Away from these two points Northward or Southward, the scale increases, i.e., for every single unit on the spheroid surface, there is a (unit + something) on the assumed plane. But within the two points the relation of the representation is the opposite, i.e., the distances on the plane are smaller than the distances on the Spheroid. The two points of intersection are called parallels (latitudes) and each zone has two parallels. These two parallels which, having exact scale (representation, needing no correction), enclose the Zone for which constants are calculated, so that whether applied for distances or angles within or outside the two parallels, the degree of accuracy of the corrected lengths and angles is within a highly acceptable extent.

Most of the constants are the ultimate answers of a combination of various correction constants which, in general, deal with the same problem. Hence the ultimate formulæ, are combinations of various other formulæ, derived individually. The Developments of these formulæ are long and difficult, but for reference they are available in Special Publications of the U.S.C.&G.S. for anyone who might need them.

CONSTANTS

A', B, C, D, E, F, and a, b given in S.P. No. 8 entitled "Formulas and Tables for the Computation of Geodetic Positions."

These formulæ are used for the computation of Geodetic Latitudes, Longitudes and Azimuths. The variables are the latitudes and longitudes for each zone whose constants are being computed. For A' (which is given a prime) indicates that the middle latitude of the Zone in question is being used.

The constants are used in computing Lambert Coordinates are C, Central Meridian, RB, Y0, L, log L and K as well as the latitudes of the two parallels and the latitude of RB. These values are given in S.P. No. 253 entitled "Plane Coordinate

Projection Tables" and the development of these constants are given in S.P. No. 53 entitled "General Theory of the Lambert Conformed Conic Projection."

The constant L is applied as a constant value for the inhole zone, and its formula comprises of "L1 and L2" the two "parallels," "A" values for the two parallels and "Z" values for the two parallels.

$$(1) \quad L = \frac{\log \cos L1 - \log \cos L2 - \log A1 + \log A2}{\log \tan Z1/2 - \log \tan Z2/2}$$

$$(2) \quad \tan Z/2 = \tan P/2 \cdot \cot^{\epsilon} Q/2$$

P is a function of "tan (Latitude) = cot P"

Q is a function of "cos Q = ϵ cos P"

ϵ is a function of " $\epsilon = (a^2 - b^2 / a^2)^{1/2}$ "

The K constant comprises one of the Parallels (L1 or L2), "A" value of that parallel and "Z" value of that parallel and value of L for that zone.

$$(3) \quad K = \frac{\cos L1}{A1 \sin 1'' L \tan^L Z1/2} = \frac{\cos L2}{A2 \sin 1'' L \tan^L Z2/2}$$

RB is a computed constant, whose parallel is far below the Zone it is applied to, C is an assumed constant usually 2,000,000. Those two constants are assigned to a Zone to make the coordinate values of points in the zone, positive.

$$(4) \quad R = K \tan^L Z/2 \text{ (using the proper Latitude)}$$

R1 and R2, are conic radii for the two parallels and R0, the middle latitude, the parallel which is slightly greater than the mean of the two parallels (sin L is equal to the middle latitude).

In the process of developing a Trilateration program it was noted in the conversion of Geodetic Coordinates to Lambert Coordinates, using the constants from S.P. No. 253, the computed values would not check the published values by U.S.C.&G.S. For this reason a computer program, "CLACPROC" was developed to compute and evaluate more accurately the values of these constants using the above formulae from S.P. No. 53. The constants computed in this program are RB, R0, R1, R2, Y0, L and K. It appears that the reference for the old constants was the sphere, from which the identical formulae for K would not check using the published value of L. The new constants are based on the spheroid, from which the formulae for the value of K checked. The verification for the use of sphere in the old constants was by making $\epsilon = 0$, when the Z value is given by $Z = (\pi/2) - L$ (L for the parallel). Using the same formulae with this Z value, the results check with those given in the publication. But using the Spheroid as reference, and using the computed L value and the Z value more accurately calculated, the identical formulae for the value of K checks and further, due to the computer's capability of computing up to 16 digits, even the other values become more refined. In Zone 3, the difference is very minute but greater in other Zones, especially Zone 2. ▲

CLACPROC 14:28 03/02/73 FRIDAY SJ1

CAL. LAMBERT CONF. PROJ. CONSTANTS
CONSTANTS PRINTOUT

ZONE 1				ZONE 2			
DEG. MIN.				DEG. MIN.			
STANDARD PARALLEL (S)	40	0	STANDARD PARALLEL (S)	38	20		
STANDARD PARALLEL (N)	41	40	STANDARD PARALLEL (N)	39	50		
ORIGINAL LATITUDE (SO)	39	20	ORIGINAL LATITUDE (SO)	37	40		
CENTRAL MERIDIAN (M)	122	0	CENTRAL MERIDIAN (M)	122	0		
RB = 24792436.612			RB = 26312242.553				
R0 = 24245358.692			R0 = 25795825.367				
R1 = 24549571.887			R1 = 26069450.085				
R2 = 23942392.935			R2 = 25523148.982				
Y0 = 547077.921			Y0 = 516417.186				
L = .6538843093			L = .6304683385				
(LOG)L = 9.8155009161 -10			(LOG)L = 9.7996632816 -10				
K = 40314108.075			K = 41077027.113				
(LOG)K = 7.6054570557			(LOG)K = 7.6135990047				
ZONE 3				ZONE 4			
DEG. MIN.				DEG. MIN.			
STANDARD PARALLEL (S)	37	4	STANDARD PARALLEL (S)	36	0		
STANDARD PARALLEL (N)	38	26	STANDARD PARALLEL (N)	37	15		
ORIGINAL LATITUDE (SO)	36	30	ORIGINAL LATITUDE (SO)	35	20		
CENTRAL MERIDIAN (M)	120	30	CENTRAL MERIDIAN (M)	119	0		
RB = 27512992.121			RB = 28652931.597				
R0 = 27057475.962			R0 = 28182404.758				
R1 = 27306666.336			R1 = 28410238.689				
R2 = 26809035.305			R2 = 27955172.429				
Y0 = 455516.159			Y0 = 470526.839				
L = .6122320410			L = .5965871522				
(LOG)L = 9.7869160545 -10			(LOG)L = 9.7756738963 -10				
K = 41747082.364			K = 42378378.845				
(LOG)K = 7.6206261287			(LOG)K = 7.6271443391				
ZONE 5				ZONE 6			
DEG. MIN.				DEG. MIN.			
STANDARD PARALLEL (S)	34	2	STANDARD PARALLEL (S)	32	47		
STANDARD PARALLEL (N)	35	28	STANDARD PARALLEL (N)	33	53		
ORIGINAL LATITUDE (SO)	33	30	ORIGINAL LATITUDE (SO)	32	10		
CENTRAL MERIDIAN (M)	118	0	CENTRAL MERIDIAN (M)	116	15		
RB = 30649425.480			RB = 32271268.917				
R0 = 30194147.318			R0 = 31846572.640				
R1 = 30455335.042			R1 = 32046899.313				
R2 = 29933696.793			R2 = 31646657.179				
Y0 = 455278.162			Y0 = 424696.277				
L = .5700118992			L = .5495175775				
(LOG)L = 9.7558839218 -10			(LOG)L = 9.7399815888 -10				
K = 43578026.266			K = 44625967.411				
(LOG)K = 7.6392675563			(LOG)K = 7.6495876439				

THE SURVEYOR IS A PLANNER

by Ray J. Peters, L.S.

(Delivered to the California Land Surveyors Association 1973 Convention – February 17, San Jose)

A surveyor will tend to relate himself to planning in one of the following ways:

1. He is a planner.
2. He is not a planner.
3. He would like people to think of him as a planner.
4. He would not like people to think of him as a planner.

He might ask himself whether or not he might be *presumptuous* to think of himself as a planner – for he has had no formal training in planning.

But did you know that many of the *foremost* planners never had any formal training in planning, either? Charles L'Enfant created the plan for the City of Washington, D.C. Washington is the only major city in the United States that approaches the classical conception of a city plan. L'Enfant was an engineer.

Andrew Ellicott took over the plans from L'Enfant, after he went back to France. Ellicott saw to the early formation of the basic systems of Washington's plan. Ellicott was a surveyor.

William Penn designed the checkerboard street system for Philadelphia in 1682; which pattern has been subsequently held in almost every American City since. William Penn was a lawyer – and the son of a surveyor.

Thomas Jefferson, on the other hand, was not a surveyor. However, he conceived the idea of the sectionalized land system in the United States, that prevails in every state except for the original thirteen. He worked closely with William Penn in the design of Philadelphia's street system. He wasn't a planner, either.

Daniel Burnham was an architect, who in 1905 conceived a classical design for the City of San Francisco. (This plan was not carried out, except for the Embarcadero, and the City Hall grounds.)

Probably the most significant city planner in the United States was Frederick Law Olmsted (1822-1903). Among his most noteworthy plans are the Columbian Exposition in Chicago of 1893, and the United States Capitol grounds. Olmsted is given complete credit for the design of New York City's Central Park, and complete credit for the fact that it is there at all. Frederick Law Olmsted had no training in planning. He was called a landscape architect, but he wasn't even one of those. He was a gardener. He had training in agriculture, horticulture, and *civil engineering*.

These old-timers noted in the history books weren't called planners, and they didn't think of themselves as planners. Today, however, there are lots of planners around who think of themselves as planners, and call themselves planners, and get paid for being planners, but are they *really* planners? Is the municipal employee behind the zoning counter a *planner*, or is he simply the fellow who realizes that the landscape has been divided by ordinances into districts, in which one is permitted or not permitted to do certain things?

Or, is a planner one who disgorges an amazing flow of nonsensical verbiage such as (listen carefully) "the utilitarian postulates of the economic-efficiency administrative analysts are regarded by social critics as convenient oversimplifications."

The foregoing is an actual quote by a professor at the University of California; one that holds a PHD in planning.

One would judge from the quote that the first requisite toward becoming a successful planner would be mastery of a process known as "double talk." Since many surveyors I know are already past masters of the "double-talk syndrome," I would presume that they are already a far piece down the planning road.

Maybe, a planner is a civil engineer. Section 6731 of Chapter 7 of Division 3 of the Business and Professions Code (The Engineer's Act) states, in part, "... Civil Engineering also includes city and regional planning insofar as the above features are concerned." ("The above features" relate to physical works, or construction.) That is the only place in California Law, to my knowledge, that regulates (or attempts to regulate) the field of planning.

That section of the law *has* been tested, to some extent. A few years ago, a California resident brought suit against the Board of Registration. He had a beef about certain County planners, and felt that that law stated that planners must be registered Civil Engineers. Since this man was audacious, financially well off, and retired, he had the inclination, the money, and the time to pursue the subject. It is noteworthy that the matter was dismissed (without trial) by every court he has ever filed it with. His next step is the State Supreme Court. I haven't heard yet whether or not he intends to go that far; but my guess is that he has dropped the matter.

So, we have seen that a man's training or background has little influence on his possible success as a planner. The law doesn't appear to regulate a planner. Just what *is* a planner, anyhow?

I went to Webster to look it up. *It wasn't even listed*, (at least, in my Collegiate Version). By this time, I was even beginning to wonder whether there was, indeed, such a thing as planning at all! It wasn't in the dictionary!

Nevertheless, there *are* such things as planners. And, in this day and age, as one might suppose, planners are specialized. Planners may be subdivided into three basic groups:

1. Social Planners
2. Economic Planners
3. Physical Planners

Rarely is any one person qualified to accommodate all three of the divisions of planning. If he *is* qualified, he's probably so far above it all that he actually no longer performs real planning; he simply sits in his ivory tower, emitting supercilious quotations about "the utilitarian postulates," mentioned earlier.

As in design work generally today, the creation of a proper "plan" requires a team effort. One well schooled in the social sciences might not give proper application to the economic factors, for example. It may be necessary for the social scientist to determine "what is," "what should be," and "how much of it." The physical planner then determines what the

new feature should look like. The economic planner then determines that it cannot be built in that manner, and the whole cycle returns to the social planner to begin it all over again. If the proper emphasis is not made on each of the three divisions, disaster results. (And disaster *has* resulted, many times.)

After the planners have reached their conclusions, after the sketches are drawn and the reports printed, the whole mess comes before the governing jurisdiction, where a handful of amateurs wielding great power take it all apart, and make the careful scientists look like a bunch of asses. Furthermore, a public hearing may be held; where groups of individuals with totally selfish interests might just shoot down the "perfect" theoretical plan with hardly any effort at all.

And the fact is, many times the roomful of amateurs is right. Many times the theoretical is so impossible or so impractical or so unrealistic as to be ridiculous.

The planner is an idealist all the way; for it is always possible to plan, but not always possible to carry out the plan. (Most plans are carried out by the janitor, who cleans the wastebaskets of the planning office.)

Yet, remember Burnham, who said, "We must remember that a meager plan will fall short of perfect achievement, while a great one will yield large results, even if it is not fully realized."

Where does the surveyor fit in? Probably, not in the social planning department. Probably, not in the economic planning department. The place of the surveyor will ordinarily fall in the physical planning area. It might even be called "land planning," although that is only a part of physical planning; which also has to do with height and bulk of buildings, traffic circulation, and the like.

The field of physical planning may even be subdivided into various subgroups, which ordinarily require another team. The first member of the team, however, should be the planner, who seeks to satisfy the social scientist and the economist. He must work in close concert with the *engineer*, who must relate the site to the buildings and the layout. At the same time, the *architect* must be consulted, who relates the desires of the planner with the requirements of the engineer. Usually, the architect alone will not properly serve his client, for he is too *building* oriented, and gives too little regard for the site. (Many architects add contour lines without any real knowledge of the meaning of a contour; they seem to draw them in to fill the blank spaces, and to make the drawing look prettier.)

If the engineer is left to make the plan, he might stress too heavily the street and site work — and create beautiful access routes all in the wrong places to buildings that may be nothing more than boxes.

The client that goes to either of these professionals for a plan without the criticism of the other is on the road to trouble. An approved plan, drawn by an architect (and perhaps bastardized by a City Council) may create inordinate complications to an engineer called in (too late) to prepare a grading plan.

All of the individuals are necessary, and all must be involved. Yet, at the head of the team must be the planner.

How does a surveyor go about becoming a planner? The same way a person goes about becoming anything else. A surveyor may become a doctor; all he must do is to study, and pass an exam. A surveyor may become a lawyer; all he must do is to study, and pass an exam. A surveyor may become a planner; all he must do is to study (there's no exam).

There probably will be an exam, soon. They're already talking about the registration of planners. (This will doubtlessly be opposed by many — as any new registration is.) Probably, however, it's inevitable.

For, what is an "aesthetic"? Ownings says, "Definition of an aesthetic is an almost hopeless challenge. Involved are questions of individual and relative taste, flexible concepts of beauty, and rigid principles of service. The more all-encompassing one tries to make his theory, the more elusive his goal seems to be."

San Francisco is considered to be one of the world's most beautiful cities. Why? It was planned, but only by bits and pieces. Burnham's plan (in 1906) was largely ignored. A gridiron street system was followed — in an almost impossible topographic situation. The city wasn't really "planned" at all — it "happened."

How did San Francisco get to be honored as "one of the beautiful cities" then? Start with the Bay — and the hills. Every city in the world constructed on hills beside a Bay is considered among the "most beautiful cities." With that kind of setting, it's hard to go wrong.

Yet, many have said, "The gridiron street system in San Francisco is all wrong. Many streets are all but impossible to negotiate, and many simply stop at the face of a cliff. The streets should have complimented the topography, by winding *around* the hills, instead of following a square, rigid checkerboard." What would you have done? Today, our concern is with "minimal grading," and "preservation of the environment."

If you were a Bay Area planner in 1850, and you had a client who owned the land under what is now San Francisco, what *would* you have done? Design the streets to go *around* the hills? Of course, you would have designed better grades — and safer conditions. But — where would San Francisco's "character" be? A city should be a succession of surprises. Would we have had the surprise of a sudden vista down a steep, walled-in street to the Bay and one of its bridges — if the streets "undulated" among the hills? Probably not. Would we have the heart-stopping moment when your car crests a hill — and you can see nothing ahead of you but sky? Probably not. Most of the "surprises" would be gone — and so would most of the city's charm. You couldn't tell the difference between San Francisco and, say, Oakland!

Following World War II, many jurisdictions rejected the old rectangular system (or checkerboard, or gridiron). (The rectangular system, incidentally, was originally a classic town design — born in the Roman military camps *before* the Year One.) The jurisdictions felt that winding streets would slow the traffic down, and relieve the monotony of the old gridiron street design. Well, the winding streets didn't slow the traffic

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down – it simply made the streets more dangerous. And, the winding streets probably helped relieve the monotony for “flatland” subdivisions; but the city fathers didn’t realize that the *real* monotony was caused by archaic building codes and subdivision ordinances. (They made it monotonous by law – and then wondered why it was monotonous.)

The *Southerwestern Legal Foundation*, in 1972, said “The traditional parochial concept of zoning, developed approximately fifty years ago, is no longer appropriate for modern community needs. Zoning as a means of maintaining the status quo of the ‘character of the neighborhood’ is now being attacked by some as nothing more than an exclusionary device violative of the rights of racial or economic minorities.”

Before the 1920’s, there were no zoning laws in the United States. In 1922, a young lawyer in New York wrote the first ordinance, for that city, that divided the landscape into districts specified uses and size of buildings, and adopted “set-back” requirements. (Set-backs, incidentally, were first required in medieval England – where it was made mandatory to clear the brush, and “set the buildings back” from the high roads, because of the highwaymen that jumped the stages from the protective cover.)

After Bassett wrote his ordinance, cities all across the country saw it as a “good” thing – and within ten years, most of the countryside was completely “bassetized.” Today, the only major city in the U.S. without zoning ordinances is Houston, Texas. Houston, apparently, likes it that way. But – just ask your local city planner what *he* thinks of adopting Houston’s method – and see what kind of response you get. You should be rewarded with an entertaining afternoon.

The brand new “Planned-Unit Development,” or “PUD” is one of the first departures from the bassetized community since 1920. I say “new” – we all know it’s not. The first Planned Unit Development in the United States was Louisberg Square, built in 1844. The land was purchased in 1796, and design began in 1826. The first lot was sold in 1834, and a house was erected immediately. The lot was 35’ wide by 75’ deep, and sold for \$2,092. By the 1844 date, all lots were sold, homes constructed, and the owners formed the first Homeowners’ Association.

These lots weren’t cheap in 1834; over \$2,000 apiece. The original townhouses still stand – beautiful brick buildings, five stories tall. The current value of each townhouse is a closely guarded secret – but it is estimated that the value certainly exceeds \$100,000. And this is for a five-story walkup townhouse, 130 years old! I understand the waiting list for purchase is so impressive that you’d better be the brother of the president if you even want to get on the list.

Louisberg Square. Louisa May Alcott owned one of them – and looked out on the (private) common area while she wrote *Little Women*. The *History of Boston* reads as follows:

“The plan was drawn in April, 1826, and on the first of June of that year the Proprietors entered into an agreement by which all of the area bounded by the house lots on the easterly side of Louisberg Square, by West Cedar Street, by the northerly side of Mount Vernon Street below the

Square, and by the lots on the north side of Pickney Street west from the school to West Cedar, was laid out in streets and lots, the latter being divided in severalty among the members of the syndicate. That indenture did not go to record until Spetember 7th, however, and none of this land was moved in the market until eight years thereafter. The pending suits of the Overseers of the Poor, which involved a challenge of the title to the lots just west of the Square, and to some of those on the north side of Pinckney Street, may have tended to discourage purchases. (You see – PUD’s had their stumbling blocks – even in 1826.) It was under the terms of that Proprietors’ agreement that the square or open space . . . and the streets parallel therewith were forever reserved for that purpose, provided that the part designated for the square be surrounded with an open fence or railing. Also, the street should be ‘ceded to the city government as such whenever they will accept the same.’ This provision did not meet with the approval of the purchasers of those house lots, however, and that has remained a private way to the present day, and under the control of the abutting property owners.”

The owners were assessed for improvement of their park, and landscaping and statuary was installed; including a statue of one Christopher Columbus. In spite of the private nature of the park, and in spite of the substantial iron fence, the owners still had problems of trespassing and vandalism, as they do today. The *History of Boston* goes on to delightfully explain the vandalism: “A small boy once managed to elude the watchfulness of the neighborhood (this was in 1852), and, either in defiance or by accident, deprived Columbus of an index finger. And then the enormity of his crime loomed up before him and, terror-stricken, he dashed down the hill and cast the evidence of his guilt into the waters of the Charles (River).”

Louisberg Square – the grandfather of Planned Unit Developments – was conceived, designed, and laid out in 1826 by a Mr. S.P. Fuller, who was (need I say it?) a surveyor.

Nowadays, we have a new animal that has entered the planning picture – an animal that apparently did not exist in Boston in 1826. That animal is called “the environment.” Apparently, we must carefully consider the effect a project may have on the environment, *before* the project may be approved. I hold that we have *always* done so – but many (including most Planning Commissions, and the State Supreme Court) do not agree with me. However, now that a fairly sufficient time has passed since everyone got so shook up about the environment, many are looking at the environment rather at arms’ length, and are (at least slightly) more rational about it.

John Muir was probably our first noteworthy environmentalist, but his time was probably a little too early to help us with many of our current problems. (I do not mean to slight John Muir in the least – I thank God for him.) Before John Muir, there was quite a group of environmentalists that spoke out stoutly against the railroads – and claimed that those great steel monsters would devastate the environment.

A British author named John Maddox recently wrote an

excellent book (published in 1972) entitled *The Doomsday Syndrome*. Mr. Maddox says, "The once-common place men with sandwich boards proclaiming, 'the End of the World is at Hand!' have been replaced by a throng of sober scientists, philosophers and politicians proclaiming that there are more subtle calamities just around the corner. The human race, they say, is in danger of suffocating itself by overbreeding, of poisoning itself with pollution and of weakening the basic structure of society through too much prosperity."

Mr. Maddox calls these people "doomsayers," and believes that too much preoccupation with the threat of distant calamity will accomplish the opposite of its intention. Instead of alerting us to the problems, it will divert our attention from good works that might be accomplished now.

The warning is that people are easily anesthetized by over-statement, and there is a danger that the environmental movement will fall flat on its face when it is most needed, simply because it has pitched its tale too strongly.

First, I think Mr. Maddox has an excellent point. The movement (in California, at any rate) started with such fervor that it may soon burn itself out (if it has not actually done so already) before it has accomplished what it should accomplish. It is usually stated that in this country, the pendulum must always swing to one extreme before it will start to swing the other way again — and that a furor is needed to get the citizens excited. Furor they got — on the day the Supreme Court handed down its Mono County decision.

For a while after that decision, all was chaos. Things have settled down a lot, now; but they may never be the same again. The claim is that we must now give consideration to the environment (as if we did not have to, before!). If we didn't give consideration to the environment before, then what were all those zoning districts, density requirements, setbacks, widths, depths, etc., etc., etc.?

My claim is simply that the procedures must be different. Now, we must lay all the cards on the table, and show the pro with the con.

I further contend that the Environmental Quality Act of 1970 has been misunderstood. (Here's where I differ with the Supreme Court.) California's Law is based on the Federal National Environmental Protection Act — little is different, except for some of the format. I contend that *both* laws were brought into being to give the private citizen (the environmentalist, if you will) the right to speak out against a steam-rolling impassive bureaucracy that built a highway or a dam wherever it wanted, and the ability to carry some weight around when he spoke.

The Interstate Highway System produced the finest system of roadways in the world. I bless the freeway every time I drive on it (except when it's crowded). It gave a lot of surveyors a lot of work, and for a long period of time. Yet, the Interstate Highway System was probably the single most devastating blow to City Planning that has occurred in this nation since the railroad was invented.

Freeways divided every community they pass through. In the poorer part of town (where they most frequently seem to go) they eradicate *many* slum sections — and those families are uprooted and moved elsewhere — creating new slums (usually,

more crowded). No thought was given, in planning the Interstate System, to the *effects* the freeways might have on communities or farm land. Except for an occasional power station, school, (or recently, a golf course) all fell before the onslaught of the freeway. Oh, they had public hearings, all right — and gave the citizenry the right to speak to the engineers (or public relations men) who listened impassively, nodded benignly, rolled up their maps, and proceeded to build the highway *exactly* as they had originally planned.

Only one thing was critical to the highway engineer: time. All he was interested in was the least amount of time to transport most of the people from point A to point B. How many times have we heard: "You can't stand in the way of progress."

Well, I think those engineers were riding the pendulum that swung all the way. I think those inscrutable faces and single-purpose thinking gave birth to the several environmental acts we have today. No longer is time the only important consideration — and no longer can the highway engineers ignore the individual.

The Supreme Court stated that the law applied to private as well as public projects, and perhaps that's the way it should be. The problem is that the Planning Commissions have delightfully discovered this brand new arrow in their quiver — with a poison-tipped head; and, boy, are they anxious to use it (and mis-use it).

It appears that the Environmental Act and the Supreme Court have turned the chessboard around; before, the public agency would not listen to the individual when the public agency wanted to build something. Now, the public agency will not listen to the individual when the *individual* wants to build something.

The public agency (as in "planning commission") should be held to the letter of the law. (They won't listen, but they should be told, anyway.) Section 21061 (of the EQA of 1970) states that the Environmental Impact Report is an *informational document*. It's supposed to give *both* the pros and the cons, and it's not supposed to be *biased* (but usually is). This can be a *boon* to the applicant, if the Planning Commission *listens*.

Too often, an Environmental Report prepared by a Planning Staff evolves as a *condemnation*, which is not the purpose of the act. The report should be like an unbiased news article, not an editorial. It should be up to the commission to appraise the situation, not the report writer.

Proper process must be followed, and all the cards must be laid on the table. We don't know yet what effect on development the environmental control factor might have over the long haul — but we must bear in mind the long-term significance as opposed to the short-term (which is one thing the Act requires).

One wonders how some things would ever have been built, if the Environmental Act processes had always been required. Would the Pharaohs have been permitted to build their pyramids, or Eiffel his tower? The Great Wall of China? (Think how that must have frustrated the jackrabbits!) Or, what if God had had to file a report on the Grand Canyon?

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COMMENTS AND LETTERS, From In, Out, and Around

"A PRIVATE SURVEYOR SPEAKS UP"

by Walter J. Hanna, Jr.

In my opinion the biggest problem confronting the surveyor in the State of California today is the lack of a qualified "Land Surveyor" in every County Office in the State. This should also be true in every City of any consequence. At the root of this problem is the change made from an elected County Surveyor to an appointed or delegated Official. I do not mean to indicate that I would like to see us return to an elected surveyor but we do need some method of assuring a "Surveyor" in the office.

Part of this problem has arisen from some unfortunate growing pains in our registration laws. There was a time, not so many years ago, when the land surveyor was the Civil Engineer. Growth and transition have reversed the roles to the point where the Civil Engineer is now the Land Surveyor in many cases. This, in itself, would not be bad if there had not been an "Exemption" written into the Land Surveyors Act for the Civil Engineer permitting him to practice Surveying. To add to this problem was the decline in Surveying education in the Colleges and Universities. We now have several thousand registered Civil Engineers in the State of California permitted to practice Land Surveying who have never had *any* education in the field. The only protection the public has from these "Surveyors" is their "Ethics" and a mild charge that they must practice within their field of competence. Unfortunately many of these engineers do not realize that they are not competent in the field of boundary surveying. Having had no education in the art, and usually very little practical experience, they have no foundation upon which to base the ethical decision as to whether they are competent.

I have had many years involvement in proposed solutions to this problem. Volumes have been written on the subject and the files are filled with "White Elephant" proposed legislation and Plans. The simple and logical first step we have never been willing to take. Remove the exemption from the Land Surveyors act for the Civil Engineer, Grandfather in the Civil Engineers now practicing and who can demonstrate proficiency and experience. Thereafter the Land Surveyor's License should be Mandatory for all who wish to practice Boundary Surveying. This is not the final solution but it would certainly get us pointed in the right direction. This is a subject in itself and I will not pursue it further at this time. ▲

DEADLINE DATES FOR THE CALIFORNIA SURVEYOR

Fall Edition August 11, 1973
Winter Edition November 10, 1973

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

Editor

Dear Sirs:

Being in the throes of a change in personal transportation, I regret being unable to attend the San Jose convention, particularly the 2 PM session on Saturday. I see little use for a land surveyor being interested in such civil engineering matters as earthquakes, except for fear that the corners of a 25' lot on the east of a fault will jump north 10' while those on the west side jump south 10'. Therefore it must be a political discrimination by which the property owners, and particularly the farmers, are stuck with building new schools where earthquake proof buildings were wrecked with great difficulty because they were built before 1930, as happened in Newman, where I made the test holes in 1912 over 1300' of alluvial cushion.

The simultaneous quake and moon eclipse in San Fernando on Feb. 9, 1971 started me on a very difficult collection of all data on over 200 major quakes available between 800 AD and 1972 AD. These data show that only 1.6% of the quakes occurred in school hours, which occupy only 7% of the year. In the tables of Calif. and Nevada quakes over 6.0 magnitude in the Richter tables, no quake occurred in school hours from the 1903 to 1959 shown. These data and the fact that in my 86 years and in the conversation of persons 60 years older, I have never known or heard of a student or teacher being killed or injured by a quake during school hours, tell me that the danger is very remote; far more so than in compulsory bussing, sports bussing or useful bussing, shopwork, football or baseball. Three plane loads of football players, coaches, cheering sections and adherents were recently killed in cheap plane wrecks. Student busses and private cars are often often involved in deadly wrecks.

My studies show that 38% more major quakes occur within 3 days of conjunction or opposition of the sun, moon and earth than of the quarter moons. This is the time of greatest pull of the gravity of the sun and moon in conjunction against the centrifugal force of the earth in orbit. A little pencil pushing, (since my dear old Dalton gave up in square root in 1957) tells me that the difference between the centrifugal force of the outer half of the earth is about 65 trillion Tons more than that of the inner hemisphere, both of which are opposed by equal forces of gravity. This strain is greatest on a vertical north and south fault at sunrise or sunset, though the trend of the fault may weaken the fault up to 2 or 3 hours earlier or later. So most quakes occur between 4 and 8 AM or PM, or in the cool of the night.

On 12/20/72 we had a full moon and quake instead of on the widely predicted quake on the more favorable date of the 1/4/73 new moon. The full moon of 2/28/72 came between 4.5 Hollister quake of the 27 and the Tokyo quake, 7.5 of the 29th. We will have a full moon on 2/17/73.

W.R. Sherman, Newman, Ca.
LS765, RCE1181

Dear Editor:

The Spring, 1973, edition of your publication "The California Surveyor" includes several interesting and informative articles. One of these is "A Private Surveyor Speaks Up," by W.J. Hanna, Jr; this was also given at a seminar held by the Institute of Transportation and Traffic Engineering last year.

Since this article presents a viewpoint critical of public officials, and county surveyors in particular, other sides of the matters discussed should be presented, and this is my objective in writing to you.

In order to give you a brief identification of myself beside name and address, I have worked a number of years in both private practice and public work. I have been, for several years, in supervisory capacity of survey work on projects such as Whale Rock Dam in Southern California, Oroville Dam and Power Plant, subdivisions, and property surveying. Some of these years have been in my own practice. I have worked for state, county, city, and special districts in California. I am 52 years old, a registered Civil Engineer, and graduated from college in 1952.

The article referred to makes it apparent that the writer has had differences of opinion with county surveyors regarding surveys and map acceptance. The actions of county officials are sometimes rightly subject to criticism. Nevertheless, the article emphasizes problems which are not generally true, and which I hope are not the total result of the writer's experience with county officials.

The beginning contains statements with which most readers could agree. Following the statement "The hordes of do-gooders, mis-guided elected officials, etc; on the back of the public servant make it impossible for him to accept — responsibility —," implication begins that county surveyors can't use their own judgement. The implication continues that these officials are manipulated by elected officials who, themselves, are misguided. No recognition is made of the elected public officials who are guided by a sense of duty to their community, or of the officials under them who act according to their experience, knowledge, and ethics, and are respected for such.

The last part of this section uses the "fact" of the impossibility of the public official to act responsibly as a reason so that the frustrated private practitioner can understand why his problems arise!

It is mentioned that the article's purpose is not to "Give'em hell," but to have the public official see from the public's viewpoint. Actually, the viewpoint given is not that of the public.

The problems described under "Map Checking" do occur. Contrary to the general impression given, however, they are not the usual case, and just as often quite the opposite has occurred: small items have been corrected without red tape, and information has been offered which the private surveyor could not have known or foreseen.

The basis of bearings, I agree, is determined by the surveyor. But what if it has been calculated incorrectly, or is

Continued on page 23

RIGHT ON

NOW OR LATER?

by Roy Watley, Jr., L.S.

Will the land surveying profession survive the test of time and budget cutbacks? As I look around, observe, and talk to future professionals, the fact that fewer students are entering the field of land surveying becomes quite clear. A student recently said, "Why should I study surveying which would result in only the practice of surveying when I could obtain a degree in civil engineering which would entitle me to design engineering works as well as practice land surveying?"

Courses in surveying are usually the first to go when the college budget is trimmed. In the fall of 1973, Chabot College, Hayward, will *not* be offering Land Surveying 65 (offered since 1967). Other institutions of higher learning have also eliminated surveying courses, which were replaced by computer or a "more important course."

Anyway you look at it, the surveying profession is getting the short end of the stick or rod. Part of the blame must lie with the surveying professionals, especially those who are too busy or "loaded down with work" to participate in the maintaining, upgrading, and enriching of the surveying profession. By encouraging young people, joining and working in surveying professional organizations, teaching and training (planned — not just trial and error) future surveyors and writing articles in professional journals and newsletters, surveyors could contribute significantly to the profession.

Responses to articles and L.S. examination problems in recent publications of *The California Surveyor* have been minimal (approximately two responses per month). A call for reporters for *The California Surveyor* was printed in the Spring Edition with exactly NO response.

Take a look at your profession and yourself. Look in — look up. What interactions exist? ▲

Examination Dates

*Final Filing Dates

Land Surveyor

April 27, 1974

January 21, 1974

Land Surveyor-in-Training

August 17, 1974

June 17, 1974

In Memorium

Mary E. Lockton, beloved wife and faithful companion of CLSA president Eugene Lockton passed away May 17, 1973. Her loss is deeply regretted by CLSA members.

Frank L. Olcott, Jr., L.S. No. 2975, of Pebble Beach, California, died of a heart attack March 2, 1973. Mr. Olcott had been a member of CLSA since 1971.

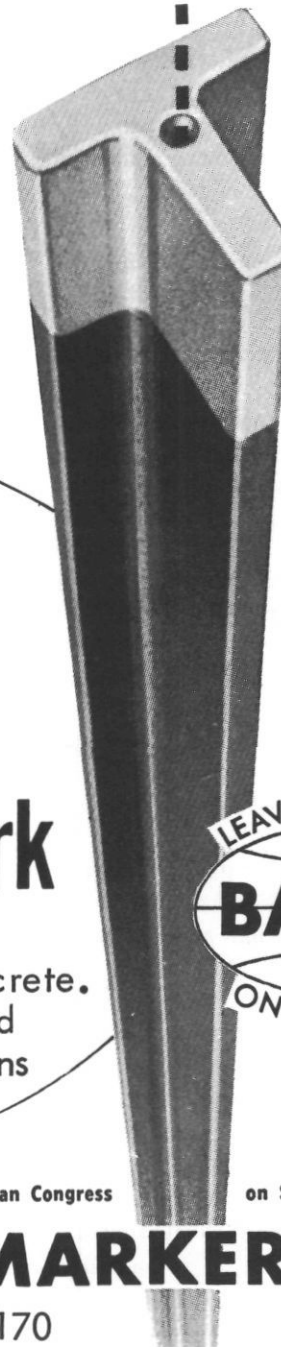
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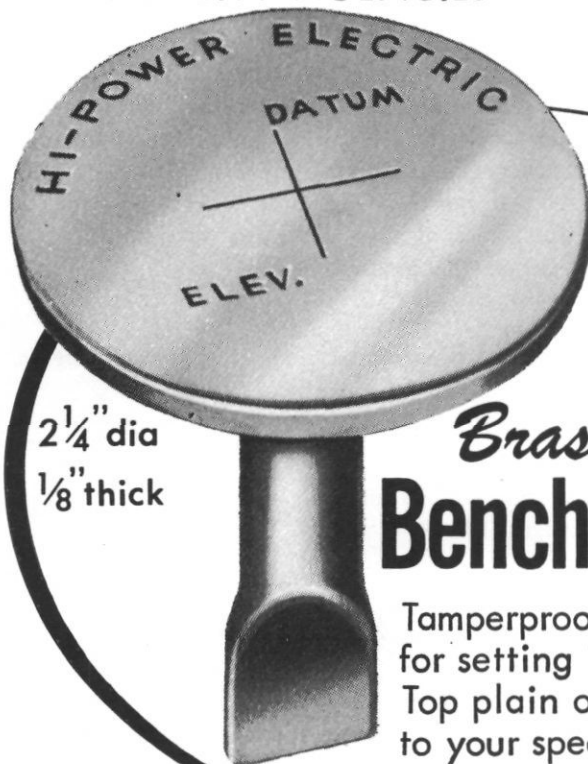
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by Chuck Wooldridge, L.S.

I just happened to be one of the fortunate land surveyors who had some family backing in my determination to enter the land surveying profession. My grandfather was a land surveyor with a proud part in the settlement of the northwest, and the development of Seattle. He was motivated by the highest standards as his personal code of ethics which bound him so strongly that I was virtually disowned for violating one of the principles. Corner location is the surveyors stock in trade; protected by the use of odd, unknown offsets; and for not adhering to this principle I had to be chastized.

This strong concern for ethics would not permit him to practice outside the normal surveyors domain, nor in any branch of surveying in which he did not possess the necessary expertise. For this reason he refrained from design of docks and piers along Seattles waterfront. He restricted his practice to boundaries, road design including grades, grading and drainage, road and railroad alignment and grades, water supply and distribution and sanitation. He was the typical surveyor, practicing his profession within the land development activities necessary to a growing area.

Like all professionals he recognized his responsibilities to his clients, to the public welfare, and to help train the future generation of surveyors including his son-in-law, my father. Many of todays surveyors are much like him, although with a much smaller field of endeavor. In fact, I am impressed when I recognize the many parallels between the surveyor of today and his predecessor.

He also recognized his responsibility to his profession. He maintained membership in the only professional society that was then available to surveyors. They could count on his support, financially with his dues, and by his membership, they could claim to represent him. But the wild west was not the place where policies were made, nor did the pressures of making a living and serving his clients leave the time for committee activities. The free time which was available after putting in his six day week, from daybreak until it was useless to attempt to compute or draft further into the night, was time devoted to his family or church.

Yes, the similarities between yesterdays surveyor and those of today are striking. True, many of us today don't work a sixty to one hundred hour week, nor spend hours with logarithms and crow quill pen but we do have new requirements on our freed time. Modern society has placed so many more responsibilities on us that we find ourselves with no more time to devote to our profession than our predecessors. After deciding which of the many organizations concerned with surveying, or our place of employment, is worthy of our support, we have trouble finding the finances to pay our dues. Then we expect this dues payment to adequately take care of our responsibility to the profession.

Maybe our affluent society is partly to blame; we buy what ever we want or need. It's the easy way to accomplish our goals. And every society will be quick to point out that they

Continued on page 22

by Don Ward, L.S.

Leadership is very important to the American system of doing things. The term "leadership" brings to mind a person of vast wisdom and experience that leads us down the road of life with unwavering certainty. Actually leadership is more often an idea that catches on or an influence of personality upon a closed system already functioning, much like a small force applied against a free-moving mass. Leadership in its highest position, for example, would be the President of the United States. Even though the machinery of Government continues to function very much along the same lines from one President's term to another, each individual President exerts his individual influence in the total process and so the pendulum of governmental affairs swings more in one direction than another. Great, too, of course, is the influence of party changes upon government affairs, but in this instance of describing leadership influence, I would confine the term to the individual's contribution and its resulting action or reaction.

The point is that the individual can and does exert a great amount of influence in the trend of thinking of a community and the higher his position in the community, the greater is his sphere of influence. Sometimes his influence is out of balance in proportion to his position or numbers in the community as in the case of the racial problems, but generally speaking, regarding professional groups, the individual influence of the professional is respected equally by the public through each professional society.

It is through this kind of individual influence that we can keep the surveying profession a respected profession in the community.

The land surveyor is deeply involved in the construction of major and diverse engineering works. This requires a thorough understanding of both the economic and physical factors that may affect such work.

The surveyor is one of the first individuals to see the site where a construction project is about to take place and it is through his eyes, methods of collecting and presenting design data that the designer will ultimately use to design and construct the project. If this work is done in a professional and thorough manner and presented properly, confidence and respect will grow for the surveyor.

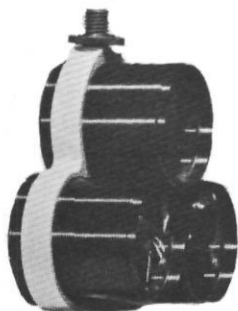
The surveyor is also deeply involved in the urban planning process. The urban planning process is simply a process that recognizes that a society is growing and changing and the shaping of public policies, laws and plans that will take care of the problems of growth and change.

In one sense it is one gigantic economical problem and can be stated thus.

Land has to be divided into the human requirements of residential, commercial, industrial, agricultural, recreational, cultural and municipal uses, each in relation to topography, social boundaries, geology, growth expansion, cost of services, utilities, governing bodies, taxing capabilities, financing probabilities, transportation requirements, and social requirements.

Continued on page 22

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PROFESSIONAL RESPONSIBILITY (OR LET GEORGE DO IT) (Continued from page 19)

do need the dollars and the numbers of the members who can't or won't do more than pay dues. CLSA certainly does. CLSA does not have the finances to provide many of the worthwhile services to the members that they want and need. Nor is CLSA able to show that it represents a large enough percentage of the profession to be effective as it could.

But even more, we need workers. Virtually every committee is in need of surveyors interested in their activities. Three of our Chapters, at the request of their membership, have made specific requests to the state society for specific programs or goals that they believe essential for the surveyor. But they don't seem to be able to find members willing to devote some time to furthering these goals. That is what the state has committees for. Paying dues and requesting action is not enough.

My grandfather belonged to a similar generation. He was too busy doing too many other important things to take the time necessary to support his profession. Maybe that's part of the reason that I, as a surveyor, find that I am not permitted to provide virtually any of the professional services incidental and necessary to land development, road design, grading, drainage, water supply, sewerage, etc. I wonder what the next generation of surveyors will be permitted to do if I, and all my peers, follow the example set by our predecessors. Should I volunteer to help, or when I'm asked to serve, will I too decide to LET GEORGE DO IT? ▲

ESCONDIDO MEN FINED

Following an investigation by the BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS, Department of Consumer Affairs, two Escondido men pleaded guilty January 23 in Escondido Municipal Court to illegally practicing civil engineering.

Philip P. Gaudet, dba Escondido Drafting and Blueprint Company, 217 West Mission Street, and Keith Owen Welsh, dba Welsh Drafting Service, 457 North Elm Street, were each fined \$250 with \$200 suspended and a \$15 penalty fee (total \$65 each) and were placed on summary court probation for two years.

Welsh was found to have practiced civil engineering without a registration and to have advertised civil engineering services in the local telephone directory.

Gaudet signed and stamped plans designed and drawn by Welsh for a non-exempt structure, a two story commercial building, in violation of the Business and Professions Code.

Non-exempt structures can be designed, signed or stamped by a registered civil engineer, structural engineer or architect. Gaudet is a registered building designer but is prohibited from preparing drawings, specifications, estimates or instruments of service for any non-exempt building, unless he is associated with a registered civil engineer, structural engineer or licensed architect. ▲



1974

C L S A

CONVENTION

LEADERSHIP (Continued from page 19)

The surveyor should thoroughly understand the laws which deal with this process. The Planning Act, the Subdivision Map Act, the local ordinances dealing with the division of land, as well as the Land Surveyors Act. Today he must also be thoroughly familiar with the California Environmental Quality Act and the guidelines adopted at the local level for the preparation and evaluation of Environmental Impact Statements (EIS).

The simple filing of a Parcel Map under a minor division of land can be a complex and frustrating affair for the owners of property and the surveyor alike.

Most adopted guidelines for the preparation of EIS include a provision for an EIS on zone changes. All new subdivisions now require an EIS and all Parcel Maps of minor divisions of land require either filing an Environmental Impact questionnaire or an EIS when a zone change is necessary.

Most owners of land have little or no idea what an EIS is, or understand the processes of zoning. As more than one owner has confessed "even the language cannot be understood." When the surveyor understands these processes and can convey this to the client, he is at once relieved and the surveyor becomes a very much needed professional.

Here is an opportunity for the surveyor to excel in leadership and professionalism. He must be thorough. He must be knowledgeable of all of the functions of various agencies involved, of the planning process and of his relationship to them. He must also conduct his business affairs with equal efficiency and thoroughness. ▲

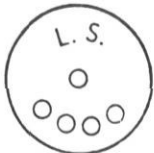
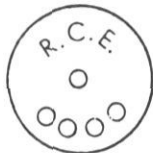
Planning needs lots of help, from many sources, in order to give the necessary considerations to all of the complexities caused by the construction (or now construction) of a housing project, a city, or a freeway. It is recognized more and more by planners today that their membership must embrace many more professions, than, simply, planning. A few years ago, then American Institute of Planners was very careful to admit to their ranks only those with an intensive formal background in planning. Of late, they have recognized the need to broaden their scope, and are accepting applications from many professions — even surveyors! The AIP is an excellent source of planning material — and is the only recognized nationwide planning association. It is hoped that their broadening of membership will give them more teeth) to provide a way for the theoretical planner to better convince the community that more aspects must be considered than a simple “stop development” as a cure-all for our ills. ▲

otherwise impossible — shouldn't the County Surveyor have anything to say? I had occasion to observe a small firm that had been reducing solar observations incorrectly, and had sent out several maps with incorrect basis of bearings.

It is true that if the County Surveyor finds errors in field work he often cannot cause corrections to be made. However, he can alert future surveyors so that errors won't be extended. This can only be done if Records of Survey are actually filed. Altogether too many surveys are not recorded, though the law requires it.

By now it appears that I don't wholeheartedly agree with some of the statements in this article. It has, however, stimulated some reflections. I hope this reply will do the same.

Robert C. Brooks
Oroville, California 95965

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1,000	20.00	20.00																																														
2,000	19.00	38.00																																														
3,000	18.00	54.00																																														
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3,000	15.00	45.00																																														
4,000	14.00	56.00																																														
5,000	13.00	65.00																																														
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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.

a. Name _____ County _____

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