

SURVEYOR

HOOSIER



**VOLUME 3
NUMBER 1
SPRING 1976**



Indiana Society of Professional Land Surveyors, Inc.

A BRIEF HISTORY OF THE INDIANA HISTORICAL LANDMARKS INC.

THE INDIANA HISTORICAL LANDMARKS INC., CAME INTO EXISTENCE PRIMARILY IN ORDER TO BRING TO THE ATTENTION OF THE CITIZENS OF INDIANA THE IMPORTANCE OF THE RECTANGULAR SYSTEM OF THE U. S. PUBLIC LAND SURVEYS, WHICH HAD ITS BIRTH IN THE STATES OF OHIO AND INDIANA IN THE LATE YEARS OF THE EIGHTEENTH CENTURY. AND ALSO TO MEMORIALIZE OUR FOUNDING FOREFATHERS FOR THEIR WISDOM AND FORESIGHT, THE INDIANA INDIANS, THEIR TRIBES, THE U. S. DEPUTY LAND SURVEYORS WHO LAID OUT THE SECTIONS, TOWNSHIPS AND RANGES IN INDIANA, THE EARLY PROMINENT LAND SURVEYORS OF EACH INDIANA COUNTY AND TO ALL THOSE WHO HAVE CONTRIBUTED SO GENEROUSLY, FUNDS AND/OR SERVICES TO MAKE THIS PROJECT POSSIBLE.

FIVE MEMBERS FROM EACH OF THE FOLLOWING ORGANIZATIONS: THE INDIANA SOCIETY OF PROFESSIONAL LAND SURVEYORS, THE INDIANA COUNTY SURVEYORS ASSOCIATION AND AN INSPIRED GROUP OF CITIZENS AT PAOLI, INDIANA, KNOWN AS THE ORANGE COUNTY PIVOT POINT ASSOCIATION, FIRST MET AT PAOLI ON JANUARY 12, 1965 AND THEREAFTER FORMED THE INDIANA HISTORICAL LANDMARKS WHICH WAS INCORPORATED ON MARCH 17, 1965.

A BOUNDARY LINE SURVEY WAS MADE OF THE 18 ACRE TRACT, THE LAND PURCHASED AND AN ACCESS ROAD CONSTRUCTED BY CONTRIBUTING ASSISTANCE.

ON JULY 22, 1968 A CO-OPERATIVE AGREEMENT WAS ENTERED INTO WITH THE U. S. FOREST SERVICE TO ASSIST IN THE CONTINUATION OF THE IMPROVEMENTS, CONSTRUCT A MINIATURE STATE OF INDIANA AROUND THE INITIAL POINT AND TO PROVIDE PROPER MAINTENANCE AND SUPERVISION OF THE MEMORIAL PROJECT. SHORTLY THEREAFTER TITLE TO THE SITE WAS CONVEYED TO THE U. S. FOREST SERVICE.

FUNDS FOR THE PURCHASE OF THE SITE, THE EARLY CONSTRUCTION OF THE ACCESS ROAD, THE ERECTION AND CASTING OF THE PLAQUES, ETC., WERE OBTAINED FROM DONORS WHOSE NAMES, OR NAMES SELECTED BY THEM AS A MEMORIAL APPEAR ON THE TWO OUTER BANDS OF THE MEMORIAL PLAQUE.

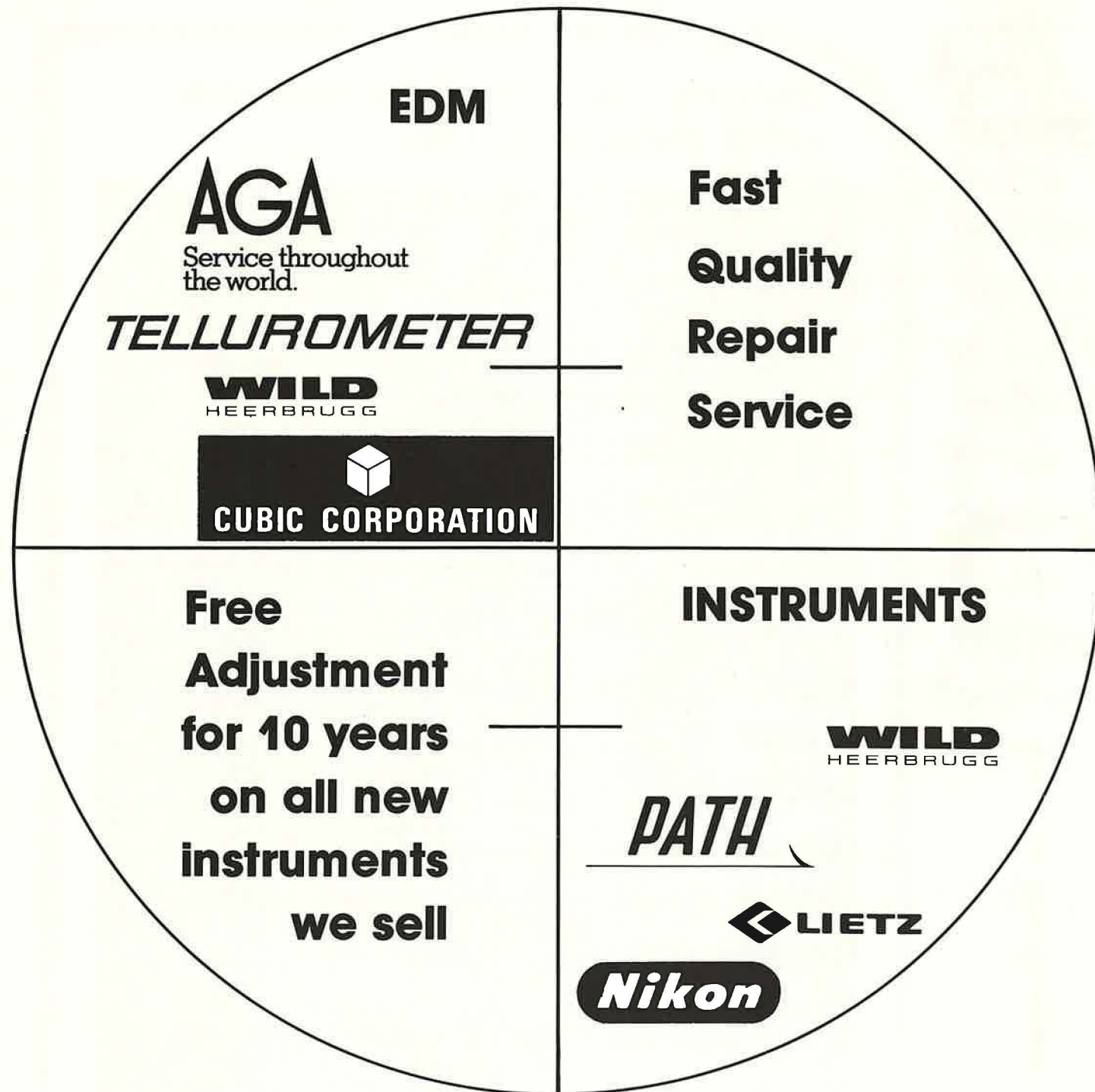
BY THE GRACE OF GOD

DEDICATED OCTOBER 14, 1973

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- BEGINNING OF INDIANA SURVEYS • 1976 CONVENTION HIGHLIGHTS
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HOOSIER SURVEYOR

VOLUME 3, NO. 1, SPRING 1976

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The Hoosier Surveyor is published quarterly by the Indiana Society of Professional Land Surveyors, to inform land surveyors and related professions, government officials, educational institutions, libraries, contractors, suppliers, and associated businesses and industries about land surveying affairs.

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Kenneth S. Curtis
Editor

Colleen Murphy
Assoc. Editor

EXECUTIVE SECRETARY'S ANNUAL REPORT

In retrospect, 1975 was a year filled with growing pains and no small amount of frustrations for the Organization. Although the measure of services increased significantly so, too, did our operational costs. Even with a dues increase, ISPLS found itself faced with a financial crisis late in the year. This was not due to any lack of financial planning but, rather, to unforeseen cost increases during the year along with accelerated activities on the part of your staff. Generally, ISPLS fell into the same economic climate which befell most private business.

Notwithstanding the financial picture, we nonetheless feel that giant strides forward were made. We were extremely successful and visible in the 1975 General Assembly and were able to pass much needed legislation concerning civil immunity for members of various licensing boards and commissions. Legislators were very conscious of our presence and, we feel, gained enormous respect for the land surveying profession. In addition, we worked closely with the Registration Board, thus strengthening and enhancing our position with that agency of state government.

For the first time, we were able to provide personal assistance to individual members, not only assisting them professionally but with various governmental agencies as well. We made strides in an attempt to correct the county surveyor situation and, although not as yet rectified, formed committees from both ISPLS and the County Surveyor's Association to attempt to solve the problem. As a result, legislation has been introduced in the Senate to provide for increased standards and compensation for county surveyors. At this writing, the bill has been recommitted to Senate Finance for further fiscal study.

Once again, ISPLS conducted a series of informative summer workshops; however, because of the business climate, attendance was down over the previous year. Although we intend to again provide such workshops this year, the subject matter and number of workshops will be carefully reviewed.

In the area of membership, our roles did not significantly increase; however, we maintained and slightly increased our membership over last year. Here is a vital area where each and every member can be of great assistance. Think what



Thomas V. McComb
Executive Secretary

we could accomplish if every member brought in just one new member this year! Hopefully that can be accomplished.

Finally, your officers and directors have worked tirelessly this past year and to each of them I owe a great debt of gratitude. Each of them are dedicated to the profession of land surveying.

1976 Budget

Income		Expenses	
290 Members at \$50.00 per year	\$14,500.00	Hoosier Surveyor	\$ 4,000.00
50 Junior Members at \$25.00 per year	1,250.00	Management Fee	7,500.00
20 Associate Members at \$30.00 per year	600.00	Rent	1,500.00
50 Student Members at \$5.00 per year	250.00	Secretarial	2,875.00
10 Sustaining Members at \$100.00 per year	1,000.00	Insurance	225.00
TOTAL	\$17,600.00	Payroll Taxes	500.00
		Unemployment Taxes	225.00
		Employee Insurance	200.00
		Postage	1,200.00
		Telephone	740.00
		Directory	1,500.00
		Stationery & Supplies	300.00
		Annual Conference	8,000.00
		President's Contingency	200.00
		ACSM Delegate	600.00
		Summer Workshops	4,000.00
		Committee Expense	300.00
		Travel, PR, Legislative	2,000.00
		Membership Development	1,000.00
		Scholarship Fund	500.00
		Newsletter Editor	300.00
		Accumulative Fund "A"	100.00
		Miscellaneous Expenses	635.00
Other Income		TOTAL EXPENSES:	\$38,400.00
New Firm Membership	\$ 4,000.00		
Annual Conference	10,500.00		
Hoosier Surveyor (Advertising)	1,800.00		
Workshops	4,500.00		
TOTAL	\$20,800.00		
TOTAL INCOME:	\$38,400.00		

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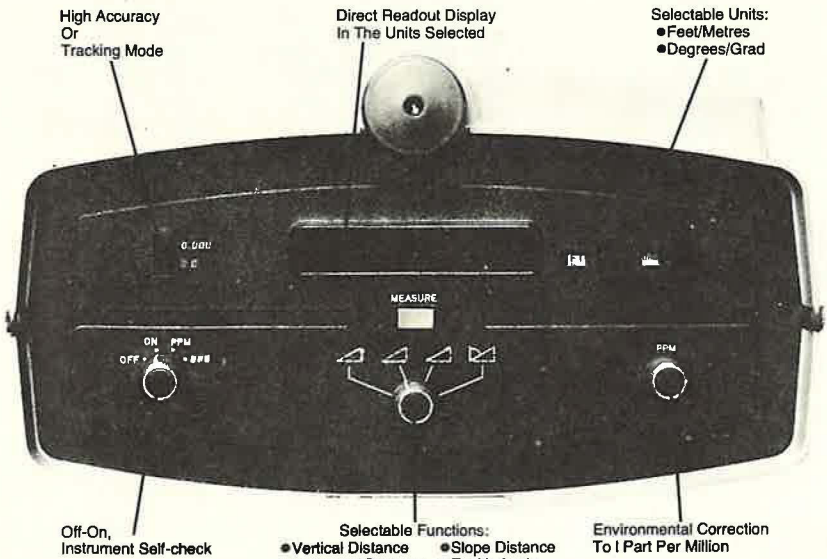
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CONVENTION HIGHLIGHTS



BRIAN M. DICKERSON HEADS LIST OF NEW ISPLS OFFICERS



Brian M. Dickerson
President



New 1976 ISPLS Officers - (left to right) Secy.-Treas. Orwic Johnson, Columbus; President Brian Dickerson, Lafayette; President-Elect John Schneider, Indianapolis; and Vice-President Zohrab Tazian, Fort Wayne.



1976 Annual Convention Committee - (first row, left to right): John Schneider (Exhibits), Roger Woodfill (Registration), John McEntyre (Program); second row: Brad DeReamer and wife (Ladies), Rex Bowman (General Chairman), Greg Schenkel (ISPLS Headquarters).



Registration desk activities.



New incoming ISPLS president Brian Dickerson (left) presents outgoing president William Tanke with a past-presidents plaque.



New 1976 ISPLS Board of Directors - (first row, left to right) Johnson, DeReamer, Tazian, Brady, Day; (second row) Dickerson, Tanke, Schneider, Franklin, Woodfill, and Curtis.



Indiana Governor Otis Bowen addresses the land surveyors and wives at Annual Presidents' Dinner.

Chapter Corner

1976 OFFICERS

CENTRAL INDIANA CHAPTER

The following is a list of officers for just one of four Chapters in the state of Indiana. These officers are for the Central Indiana Chapter.

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Director CIC-ISPLS

Due to John McEntyre's foot injury before the ISPLS Conference, we are wondering how he managed to get his wife's 6 foot Weeping Fig tree home from Stouffers?

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Land Surveys Division/ ACSM Activities

By John G. McEntyre

It would be an ideal situation if every surveyor could attend the meetings of the ACSM Board, the meetings of the Land Surveyors Division Board of ACSM, the ISPLS Board meetings, and several committee meetings of these divisions and societies. He would no longer wonder what these groups were doing for the so-called "grass roots" surveyor. Hopefully he would perceive further the fact that all these groups desire input from the local surveyor and he would strive to increase this input from his local chapter to the state level and from his state society to ACSM. The position of local chapter in the sequence individual surveyor-chapter-state-national is truly an important one.

I am fortunate to have the privilege of presently serving on the Board of the Land Surveys Division of ACSM. Some of the items of business at the February LSD Board meeting concerned:

1. Status of Surveying Profession

The Board passed a resolution recommending that the ACSM Board take immediate steps to establish liaison with the agencies which construct and/or approve definitions and classifications affecting surveying practice and education (fifteen such agencies are identified presently). All the facets of

this problem reflect that these agencies are defining the land surveyor as a technician, not a professional. All types of organizations, national, state, and local draw on these agencies for their definitions. Whether a surveyor works for the government or completely in private practice, the accepted definitions of land surveying will eventually affect his status both as to his reputation with the public and his salary or fees.

2. Moonlighting

The Board discussed recommendations of the Ethics Committee relative to moonlighting. It is probable that the Board will propose a policy statement to the ACSM Board for adoption relative to moonlighting at its October meeting. Basically the LSD Board seemed in agreement that: (1) Moonlighting 'per se' is not unethical or illegal; (2) Such activity should be restricted to individual lot surveys, accident plats and such work which can be completed in a short time, that is, lengthy commissions should be avoided; and (3) Conflicts of interest must be avoided (examples are use of position to obtain work and use of employer's equipment without compensation.)

3. By-Laws

The Board discussed a report to revise the by-laws of the Division. One

important change proposed was to structure the LSD so that specified regions of the U.S. would have a director on the LSD Board. It is planned to take action on proposed change to the by-laws at the October meeting.

4. Public Relations

Recommended the making of two more 30-second TV films for distribution to national and local stations during the Bicentennial Year.

During its meeting the Board viewed the 30-second TV film relating surveying to the Bicentennial theme and which is sponsored by ACSM. It is available now. Two copies of this film was given to each section and affiliate which contributed \$200 to ACSM for its production. It is an excellent film. Why 30 seconds? TV stations must donate so much time to service items; the time-limit on service programs is 30 seconds. The Annual Program of the Land Surveys Division also included an excellent panel discussion on the present status of surveying education.

Please feel free to address questions or suggestions relative to the Land Surveys Division of ACSM and its activities to me. I hope to discuss the activities of LSD/ACSM often in our **Hoosier Surveyor**.

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THE BEGINNING OF INDIANA SURVEYS *

By Ladislav Matousek
4001 Madison Avenue
Brookfield, Illinois 60513

*At the 24th Annual Convention of ISPLS, held in Indianapolis, January 29-31, 1976, a two-hour presentation on the "History of Surveying in Indiana" was given by Paul Million, Ken Curtis, Ladislav Matousek, and Donald Gwinnup. This paper was Mr. Matousek's contribution. Later issues of the HOOSIER SURVEYOR will contain the other papers on history as a part of our nation's bicentennial celebration.

At beginning of the 19th century, most of the area of the present State of Indiana was the property of various Indian tribes, with two exceptions. Located in the southeast part of the state was a relatively small tract of land, approximately 150,000 acres, called Clark's Grant. This land was granted to General George Rogers Clark and to his soldiers (1) in 1783 by the Congress of Virginia, but the right of the Indians was not extinguished until 1795 by the treaty of peace in Greenville, signed by Gen. Anthony Wayne and by chiefs of 12 Indian tribes on August 3rd that year.

Clark's Grant was the first piece of land in present State of Indiana, which became the property of the United States and to which the claims of other states and of the Indians were nullified. The outboundaries of this grant were already surveyed in 1786 by William Clark, cousin of General Clark, and as military bounty land was excluded from later public land surveys.

By the same treaty at Greenville, an agreement was also reached about the boundary line between the lands of the United States and the lands of the Indian tribes. The Indian tribes relinquished all their claims to the lands easterly and southerly of the boundary line which was described in the treaty. The main part of this land is located in the present State of Ohio, the narrow tapered strip on the west side is encroaching into the area of the present State of Indiana along its east boundary. This narrow strip, about 3% of the area of the state, was the first public land in Indiana. In 1797 Israel Ludlow started with the survey of Greenville treaty line (2) and part of this line, being a straight connection between Fort Recovery and the mouth of Kentucky River, was completed in 1799. This part is located in the present State of Indiana. In the same year, Ludlow ran from the mouth of the Miami River to the north the true meridional line, which forms in accordance with the Northwest Ordinance of 1787 the boundary line between the states of Ohio and Indiana. This line was used as a guide line for ranges and townships in all areas west of the Symmes Purchase. Later, the name of the **1st Principal Meridian** was assigned to it. The townships in this area were laid out in next years by Ludlow, and surveys were almost completed at the beginning of 19th century. The surveys were actually done as a part of the Ohio surveys under the Ordinance of 1796, and in a similar manner as the surveys of famous Seven Ranges.

There was, however, another tract of land in the State of Indiana which was ceded to the United States by the above mentioned Greenville treaty. The description of this tract was very vague in the treaty. I quote from said treaty the exact description: "The post of St. Vincennes, on the river Wabash, and the land adjacent...". It was not until 1803 that by the treaty of Fort Wayne dated June 7, 1803, the boundaries of this uncertain tract were specified. This very large tract, which is still called Vincennes Tract, was generally an oblong, approx. 70 by 40 miles, and 1,800,000 acres. About one sixth of it is located on the west side of the Wabash River, and is today a part of the State of Illinois. The beginning of the surveys of this tract means the beginning of the most interesting part of public lands surveys of the State of Indiana, and was the most important for the history of American Rectangular Survey System.

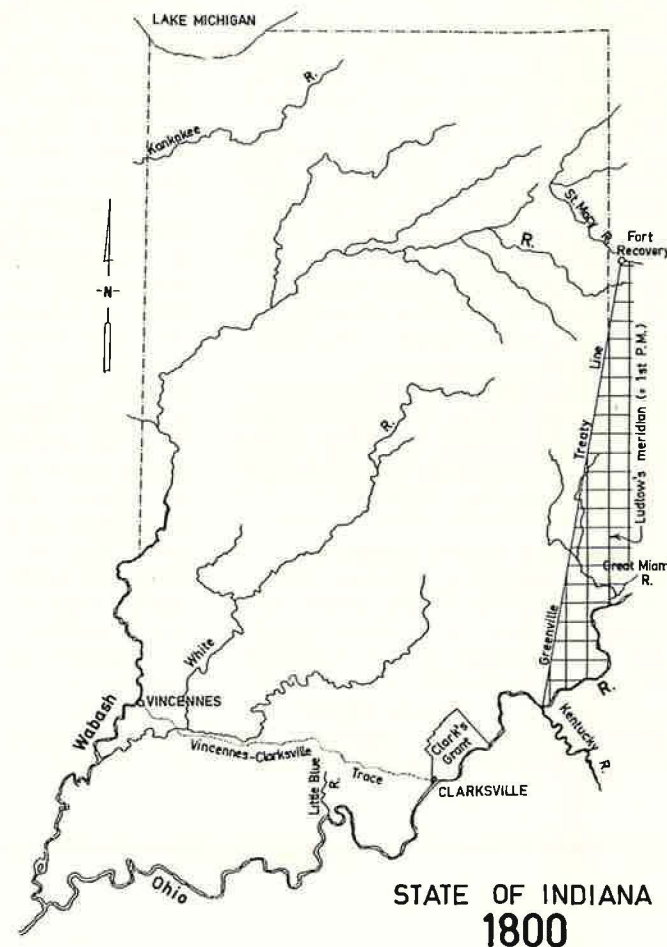


Figure 1.
Ladislav Matousek - 1976

The Vincennes Tract was surveyed under the direction of Colonel Jared Mansfield, the Second Surveyor General of the United States. Mansfield (3) was undoubtedly the best qualified Surveyor General that United States ever had. During Indiana surveys he made American Rectangular Land System really work, and he laid out the base for its framework, which remains today unsurpassed in its originality and beauty.

Jared Mansfield was a Professor of Mathematics and Physics on the Military Academy in West Point, when he was - in 1803 - appointed by President Jefferson to a position of Surveyor General, replacing General Rufus Putnam. At the time when Mansfield was on his way to Marietta in Ohio, where the office of Surveyor General was located, the survey of the boundaries of Vincennes Tract was already in progress. The outlines of this tract were laid out in field by the War Department, on the request of Governor Harrison, and surveys were performed under the direction of Surveyor General of Tennessee, Thomas Freeman. Unfortunately, the exact data of this survey are not available, because field notes of the surveys were not fully preserved. The surveys were probably performed in the second half of 1803, and in first months of 1804.

In March 1804, the Congress of the United States passed an Act for a disposal of the land in Vincennes Tract, and one month later the Secretary of the Treasury, Albert Gallatin gave the order to Mansfield (4) to start with the survey and subdivisions of this area.

In the time when Mansfield took over the position of the Surveyor General, the government surveys of the public lands did not progress very well (5). Unorganized, or badly organized surveys of the State of Ohio, with unsuccessful experiments of Ohio Land Company and of Symmes Purchase, caused enough dissatisfaction in Washington. These were probably the main reasons for dismissal of Rufus Putnam, and for appointment of the nonpolitical person and scientist, J. Mansfield, on his place.

Mansfield perfectly fulfilled all expectations, and brought the American Rectangular System from the disorder of the Ohio surveys to the perfection of this system, as we know it today. The radical changes in the system, new ways which he invented and introduced into public land surveys, can be found in every chapter of the issue of the government Manual for Public Land Surveys (6). The main stages of Mansfield's performance were the south part of the State of Indiana and the south part of the State of Illinois.

With the survey of Vincennes Tract, J. Mansfield faced difficult problems. He did not have enough accurate instruments (7), he did not have proper maps (8), his office was located several hundred miles from the area to be surveyed, and communications with his deputy surveyors were very difficult and slow. Vincennes Tract itself was an insulated tract, about 90 miles west from the Ohio state line, and Gallatin asked to complete the surveys during one year, so that the sales of public lands in this area could take place in April or May of 1805.

Mansfield started his work as soon as the plat of the survey of Vincennes Tract reached his office. It was probably at the end of June 1804. Field notes of the survey were not yet available, because Freeman returned them to the War Department much later (9). Mansfield first prepared a plan for the survey of the whole of Indiana because he did not want to survey Vincennes Tract as an independent unit, but as a part of one uniform system for the entire state. He deviated from the methods used before, and decided to lay out one net of the rectangular system through all of Indiana, consisting of uniform rows of ranges and townships, related to two base lines, one longitudinal, the other latitudinal. We call today these lines the principal meridian and its base line. Mansfield also decided to deviate from the original Jefferson draft of the Rectangular System in that the main meridians should form the boundaries of the states, and the ranges should be related to these lines, as was done, for example, on the west side of the State of Ohio.

We know today that Mansfield's new revolutionary system was the only way to save the American Rectangular System from failure. We also know that Mansfield's new system was not accepted with full approval by his superior, Albert Gallatin. The sharp discussions appeared in correspondence between these two leading men for several years (10). Mansfield, however, knew very well that his way was correct, and he knew also, as a soldier, that barren discussion could cause nothing other than harmful delay of surveys, on which the progress of the finances of the United States was depending. That is why he started his survey in field as he planned, even before he submitted his plan to A. Gallatin for the approval (11).

I believe that it was in July, or at last in August of 1804, when he assigned the first surveying operation in Vincennes Tract to his Deputy Surveyor, Ebenezer Buckingham. Buckingham was in charge of laying out in field the base line, which in Mansfield's plan also formed the base line for all surveys of Indiana, and to establish on this line the point of beginning for future townships and ranges. The intersection of the true meridian extended northerly from the south corner of Vincennes Tract, with the base line was selected by Mansfield as the corner of townships 1 & 1 North & South of Base line, Ranges 2 & 3 West of the meridian, which we call today the **2nd Principal Meridian** (12), and which Mansfield called at that time as a directrix. The directrix itself could not be laid out in field, because most of this meridian was located in an area owned at that time by Indians.

Unfortunately, we do not have enough informations about Buckingham's surveys. Ten years ago, a dedicated archivist at the Indiana State Library, Margaret Pierson, after a long

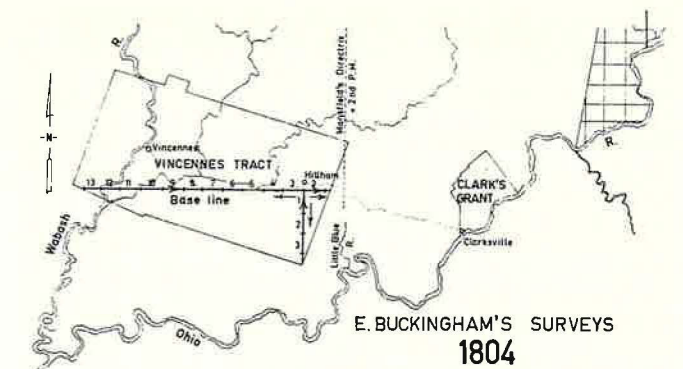


Figure 2.
Ladislav Matousek - 1976

search made at my request, found a part of Buckingham's field notes (13). It seems that the discovered manuscript is the same as mentioned by George Wilson in 1919 (14). It is only a fraction of the original field notes (15), and covers Buckingham's survey of his meridian north of the south corner of Vincennes Tract to the base line, the establishment of a common corner to townships 1 & 1 North & South of Base line, Ranges 2 & 3 West of the Directrix (said point is located approx. 3 miles south of present village of Hillham, between Dubois and Oranges counties) — and this last described point became the point of beginning of the Vincennes Tract surveys, and also of the State of Indiana. The manuscript also covers Buckingham's survey of the true Base line from the point of beginning to the east line of Vincennes Tract, and west to the southwesterly boundary of it.

Unfortunately, we did not find the first part of Buckingham's surveys, i.e. the description of the original survey of the base line in the direction from west to east. We do not know how Buckingham started this base line. We can only assume that the west corner of Vincennes Tract was probably intended to be a starting point of the base line, because in the preserved fraction of Buckingham's notes is his complaint that the west corner of Vincennes Tract was never set by Freeman... It seems that Buckingham was forced first to reestablish southwesterly line of Vincennes Tract by running a line from the mouth of the White River westerly (in accordance with the treaty of Fort Wayne) for a distance of 12 miles, and then he used this point as the starting point for the survey of the base line to the east. This part of Buckingham's surveys is, however, still a mystery, and we can only hope that the missing part of the manuscript will be found some day and will clarify these events.

In following months, Buckingham and other surveyors continued in surveys and subdivisions in Vincennes Tract, and the main part of it was completed at the end of 1804.

At the time when surveys of Vincennes Tract were in full progress, Governor Harrison signed another treaty with Indian tribes (16), by which a very large tract of land, south of Vincennes Tract, was ceded to the United States. In the Spring of the following year, Congress passed an Act for surveying and subdividing of this new purchase, and Albert Gallatin gave on March 13, 1805, Mansfield an order (17) to start with the surveys of this new area. Mansfield assigned this job to his best Deputy Surveyor, William Rector.

At that time, Mansfield knew that the surveys of Vincennes Tract were not quite in agreement with the accuracy that he expected, and he created a sophisticated plan for new surveys. With this plan, he also intended to build a "bridge" for another tract of land, called Kaskaskia Purchase in the south part of present State of Illinois, which was ceded to the United States already in 1803 (18). The surveys of this tract were delayed, because of uncertain limits of this tract on the east side. Unfortunately, I was not able to find the field notes of Rector's surveys, except very small part (19) which covers only the area in the State of Illinois.

Rector began his survey on Buckingham's meridian, at the corner of Townships 3 & 3, 4 & 4 South of the Base line, Ranges 2 & 3 West of Mansfield directrix, and run the meridian to the south, and he established the corner of townships 4 & 5 along this line. From this point he started

the so-called East & West line to the east, evidently following Mansfield's directives. In a very short distance, about 10 miles, he struck the Ohio River and he was very much astonished, because he expected to reach the river much further, probably at a distance of 30 or 40 miles. The unexpected close location of the Ohio River was evidently the reason that Rector deviated from the Mansfield's directive (20), and decided to extend Buckingham's meridian farther to the south to find how far the Ohio River was in that direction. He reached the river at 13 miles - a distance also unexpectedly short. Then he returned to the corner, wherefrom he started the East & West line in opposite direction i.e. to the west, establishing along the line township corners for the future surveys of the area south of the East & West line. He struck the Wabash River at the distance of 67 miles and 26.32 chains, entering into 14th Range West of Mansfield's directrix.

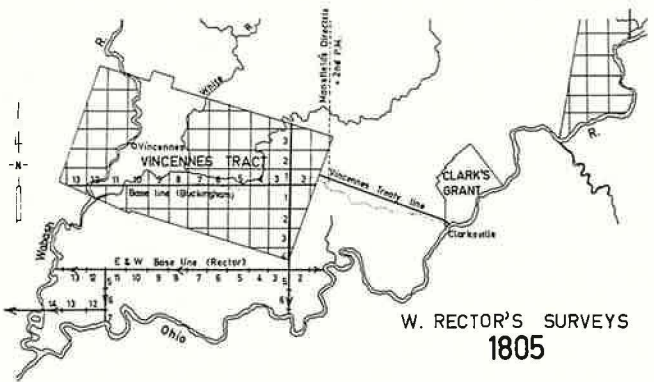


Figure 3.
Ladislav Matousek - 1976

Rector returned afterward through Vincennes-Clarksville trail to the east line of Vincennes Tract, and from here laid out in accordance with Harrison's instruction the Indian treaty line (21) along this trail. The accuracy of this treaty line was not important at that time, because Indians already ceded the northerly adjacent land to the United States (22). But the line was a necessity, because the Act of Congress for disposal of this area was limited by the said treaty line.

The communication between Rector and Mansfield was very difficult; Mansfield's office was in Cincinnati (23), and Rector worked in field through the south part of present State of Indiana. Rector was therefore often forced to make his own decision (24). Waiting for instructions from Mansfield could cause unpleasant delay in surveys. When Rector completed the Indian boundary line, he stayed for a few days in Louisville, from where he sent a written report to Mansfield. He stated in his report that he decided to resurvey his East & West line to eliminate any defects caused by possible inaccuracy of the surveying crew. On July 29, 1805, he left Louisville, moved to the corner of Townships 4 & 4, 5 & 5 South of Base line, Ranges 2 & 3 West of Mansfield's directrix, and started the resurvey of the East & West line in the direction to the west. He had, evidently, serious doubts about his first survey, not only about the accuracy of measured distances, but also about the direction of the line itself. Every 18 miles, he interrupted the survey to the west, ran lines north to the East & West line established by Buckingham, and measured distances between both lines for the parallelity. He made certain corrections in the distances along his East & West line, but he did not change the direction of the line, although he established undeniably that both lines are not parallel, and that they are inclined together by almost 1 mile (25) at the distance of 54 miles.

Rector then began with the survey of sophisticated bridge, to connect existing surveys with Kaskaskia Purchase. He evidently followed the directives of Mansfield, as were sketched in Mansfield's plan for the surveys of Indiana. Rector could not extend his East & West line (between Townships 4 & 5 South of Base line) across the Wabash River, because on the opposite bank of the river was a land belonging to Indian tribes, and it was impossible to estimate the correct width of this land (26). The easterly line of

Kaskaskia Purchase in this area was described as a dividing ridge between Saline Creek and Wabash River, and this line was not quite easily ascertainable. The directives which Mansfield gave to Rector are probably not preserved, but from the operation performed by Rector, the intention of Mansfield is clearly comprehensible. It was known, at that time, that from Vincennes the Wabash River flows generally to the south, and the direction of the Ohio River was generally to the west.

Mansfield probably planned to establish the township corner closest to the conjunction of both rivers, and from this point to run new East & West line to the west, across the Wabash River and up to the Mississippi. He knew that even this line must encroach into the Indian lands, but he assumed that the width of Indian strip would be very small in this area, and that Indian tribes would not cause any difficulties to Rector's crew at this distance (27). Governor Harrison also gave to Rector a special paper with his official seal, directed to various Indian tribes (28), in which he requested them to treat Rector and his people well.

The last township corner along Buckingham's base line on the east side of the Wabash River was the corner between Ranges 11 and 12 West of Mansfield's directrix, and this range line was selected by Mansfield for the connection to the Kaskaskia Purchase. When Rector completed his East & West line between Townships 4 & 5 South of Base line, and struck the Wabash River, he returned to the corner between Ranges 11 & 12 on his line, and from this point he ran the true meridian to the south. He reached the Ohio River at a distance of 15 miles, 36.25 chains. The last established township corner, closest to the Ohio River along this line, was the corner of Townships 6 & 7 South of Base line.

From this corner he started his new East & West line to the west, and struck on October 5, 1805 the Wabash River at the distance of 18 miles. On October 11, 1805, he continued his line across the river, across the Indian lands, and through the south part of Illinois without difficulties, and completed Mansfield's plan up to the Mississippi River. This and further operations of Rector in this area are part of Illinois surveys, and are not the subject to present study (29).

The defects, discovered by Rector's resurvey in south part of Indiana, brought to light several problems which Mansfield did not expect, and which led to further improvement of the American Rectangular System. It appeared, for example, that the magnetic variation is much more important for surveys than was assumed, and that even a small inaccuracy of it could cause serious distortion of the government net. It was incorrect to run surveys through large areas by the use of a variation established by astronomical observation on one local point, as did Buckingham and Rector in their base lines. The astronomical observation for variation should have been repeated every 10-12 miles (30) to ascertain proper surveying work. The effects of local distortions of the magnetic needle, which were disregarded in previous government surveys, also appeared quite important.

The East & West line, run by William Rector, is a line of great importance for the history of American Rectangular Survey System. This line represents first attempt - and successful attempt - for the solution of the problem of convergency of meridians in government surveys. The Rector's East & West line was and is the first Correction, or Standard Line ever introduced in Government Public Land Surveys. It is interesting that this line was run at a distance of 24 miles from the Base line, the same distance which finally, after 1881, became a mandatory distance for all Standard Lines.

Guide Meridians were not introduced in government surveys in Indiana. There was no need for them, because all range lines at that time were supposed to be true meridian lines. They were introduced in government surveys many years later, when the surveys of Indiana were already completed.

The surveys of Indiana continued smoothly afterward as the extension of the framework developed by Mansfield in its south part.

With the surveys in south part of Indiana and in south part of Illinois, the surveying career of J. Mansfield ended. His departure from the office of Surveyor General was unexpected, and unjoyful...

A few weeks after the eruption of the American-English War in 1812, 53 year-old Mansfield had a stroke, which eliminated him from further activity. In September 1812, President Madison appointed in his place another scientist, a former Professor of Natural Sciences on the University of Georgia, Col. Josiah Meigs. When Meigs arrived to Cincinnati, he found the office of Surveyor General empty... Not only was Mansfield missing, but also the desk of his chief clerk and right hand, Capt. John Mansfield (31), was unoccupied. Capt. Mansfield was another victim of the American-English War. Under these circumstances, the Meigs' beginning in his new position was certainly not an easy job. But the most important part of the Indiana surveys was at that time completed.

Jared Mansfield never fully recovered from his illness. Meigs asked him several times for help, and Mansfield tried several times to go to Cincinnati, but never made it. The result of the war was also not helpful to Mansfield's health. One letter (32) to his friend, written in 1813, passed my hand. I quote from it:

"I expect as soon as health will admit, to take my status at West Point, a retired place, where I shall endeavour to forget the painful feeling, excited by the reflection of our wretched public and military disgrace. I shall apply myself wholly to science and philosophy..."

I do not think that his dream ever came true. He lived for several more years, but I did not find any trace of his further activity.

The public land surveys in the State of Indiana and in the State of Illinois were the swan song of his life....

REFERENCES

- 1) Valuable material related to the beginning of Public Land Surveys can be found in the National Archives, as part of Record Group 49 of Bureau of Land Management. The important correspondence to these events is preserved in 61 volumes of three parts library. First part (marked by me by letter A - for simplification of further references) consists of the drafts of letters from the office of Surveyor General. - Second part (marked as B) includes the letters sent to the Secretary of the Treasury, and the third part (marked as C) includes the letters sent to the Surveyor General or his office. Clark's Grant is located in Part B, Vol. 3.
- 2) The line between the lands of the United States and the lands of the Indian tribes is described in the treaty as follows: Beginning at the mouth of Cayahoga river, and run thence, up the same, to the portage between that and the Tuscarawas branch of the Muskingum; thence down that branch to the crossing place, above Fort Lawrence; thence westerly, to a fork of that branch of the Great Miami river running into the Ohio, at or near which fork stood Loromie's store, and where commence the portage between the Miami of the Ohio and St. Mary's river, which is a branch of the Miami, which runs into lake Erie; thence, a westerly course to Fort Recovery, which stands on a branch of the Wabash; thence, southwesterly in a direct line to the Ohio, so as to intersect that river opposite the mouth of Kentucky or Cuttawaw river - Cf. Am.St.Pap.Ind.Af. 1/562.
- 3) First Surveyor General, Rufus Putnam served from 1797 to 1803; followed by J. Mansfield (1803-1812), J. Meigs (1813-1814), E. Tiffin (1814-1822) etc.
- 4) Cf. Gallatin's letter dated Apr. 30, 1804; Rec. Gr. 49, Part C, Vol. 1.
- 5) For the details on this period of government surveys see the excellent book of W. D. Pattison, Prof. of Univ. of Chicago: American Rectangular Land Survey; 3rd ed. 1970, Ohio Hist. Soc.
- 6) Manual of Instructions for the Survey of the Public Lands of the United States; 1973, Dept. of Interior, Bureau of Land Management.

7) Mansfield had only one sextant, but its accuracy was not acceptable for Mansfield's requirements. The point located by astronomical observation with this instrument was not guaranteed to one half of geographical mile. The special astronomical instrument, ordered by Mansfield from London in 1803, was not in his hands yet in 1807.

8) The most used map at that time was T. Hutchins' map of the Northwest Territory; 1778, London. Pattison demonstrated the inaccuracy of this map in his book listed in footnote 5. - Cf. Fig. 4 and 5 in said book.

9) Cf. the letter listed in footnote 4.

10) Cf. letters between Gallatin and Mansfield dated Oct. 26, 1804; Mar. 13, 1805; May 24, 1805; May 1, 1806.-Rec. Group 49, Part B, Vol. 2 and Part C, Vol. 1.

11) Mansfield's letter with his plan sent to Gallatin was dated Oct. 26, 1804.-Rec. Group 49, Part b, Vol. 2. The drawing is missing.

12) The name "2nd Principal Meridian" appeared for first time in Mansfield's letter to Gallatin dated Oct. 26, 1804; Rec. Group 49, Part B, Vol. 2.

13) Original is now in State Library in Indianapolis.

14) George R. Wilson: Early Indians Trails and Surveys; Ind. Hist. Soc., 1919.

15) Manuscript is dated Oct. 15, 1804 and marked with letter B, indicating that it is a part B of his surveys.

16) Treaty at Vincennes, dated Aug. 18, 1804, and oth. also at Vincennes, dated Aug. 27, 1804.-Am.St.Pap.Ind.Af. 1/689.

17) The letter of Gallatin to Mansfield of the same date.-Rec. Group 49, Part C, Vol. 1.

18) Treaty at Vincennes, dated Aug. 13, 1803.-Am.St.Pap.Ind. Af. 1/687.

19) Manuscript identified by author in June 1971. W. H. Smith Memorial Library in Indianapolis bought the manuscript at public auction in Ohio, approx. 20 years ago. Carolin Dunn, chief librarian, called author's attention to it.-Cf. Cook County Highway News, Vol. XVIII, No. 9; 1971, Chicago.

20) Cf. Rector's letter to Mansfield, dated Aug. 29, 1805; Rec. Group 49, Part C, Vol. 1.

21) Treaty at Vincennes, dated Aug. 18, 1804.-Am.St.Pap.Ind. Af. 1/689.

22) Treaty at Grouseland, dated Aug. 21, 1805.-Am.St.Pap. Ind.Af. 1/696.

23) Office of the Surveyor General was established by the first Surveyor General Rufus Putnam in his "hometown" Marietta in Ohio, 1797. In May 1805 was moved to Cincinnati, and in Dec. 1814 to Chillicothe.

24) Problem of communication described Rector in his letter to Mansfield, dated Oct. 24, 1805. At that day Mansfield's letter of August 26 reached him.

25) Exact difference was 64.66 chains.-Cf. Rector's letter dated Oct. 24, 1805; Rec. Group 49, Part C, Vol. 1.

26) From today's maps could be estimated the width of Indian land in this area as about 30 miles.

27) The width of Indian land was less than 10 miles.

28) Cf. Rector's letter to Mansfield, dated Aug. 29, 1805; Rec. Group 49, Part C, Vol. 1.

29) For details in this area see author's study: The Beginning of Illinois Surveys; Illinois Libraries, Vol. 53, No. 1, or reprint under the same title, published by the Czechoslovak Society of Arts and Sciences in America, 1971.

30) Cf. Mansfield's letter to Gallatin, dated May 22, 1807; Rec. Group 49, Part B, Vol. 3.

31) Cf. Meigs' letter to Gallatin, dated May 27, 1812; Rec. Group 49, Part B, Vol. 3.

32) Letter to T. Henderson, dated Apr. 3, 1813; Rec. Group 49, Part A, Vol. 1.

ILLUSTRATIONS

Fig. 1: State of Indiana 1800

Fig. 2: Buckingham's surveys 1804

Fig. 3: Rector's surveys 1805

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Indianapolis, Indiana 46204

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16568 **Smith, E. Brian**
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San Mateo, California 94402

16569 **Zeisloft, Robert H.**
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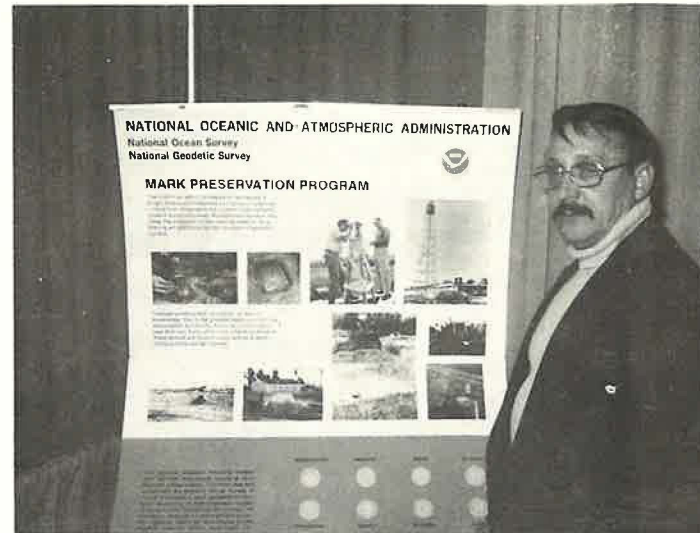
16570 **Stefanos, Chris P.**
10917 S. Kenton, Oak Lawn, Illinois 60654

16571 **Guntermann, Alfred E.**
Energy Economics, 1007 Nuttman Ave.,
Fort Wayne, Indiana 46866

16572 **Landrum, Leslie H.**
623 W. 69th Terrace, Kansas City, Missouri 64113

Survey Mark Maintenance Program

The National Geodetic Survey, NOS, (formerly the C&GS), NOAA, has been responsible for establishing and maintaining the nation's horizontal and vertical control networks for more than 160 years. These networks now consist of more than half a million marked control points in the United States. The maintenance of these networks is presently the responsibility of 15 full-time field engineers who regularly recover, repair, or reset markers in danger of being disturbed. Anyone having information regarding markers that are in need of repair, in danger of being destroyed, or disturbed, is requested to notify the Rockville office of NGS as follows: The Director, National Geodetic Survey, C17, Rockville, Maryland 20852 (Phone: 301-443-8319). The maintenance man assigned to Indiana, Illinois, Wisconsin, and Michigan is John D. Rigney, 1621 N. Michigan St., Lot #39, Plymouth, Indiana, 46563. Land surveyors are encouraged to participate in this perpetuation program.



John D. Rigney, Plymouth, IN, local NGS Mark Maintenance contact.

1975 Summer Surveying Project Course



1975 Summer Surveying Project Course participants.

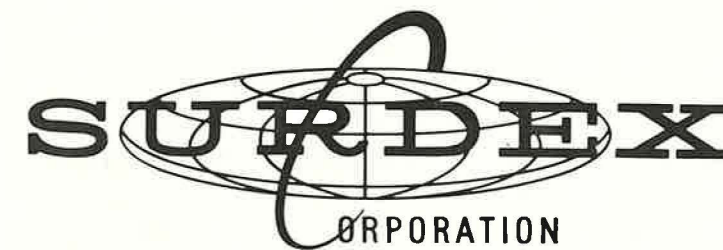
Purdue University initiated a Bachelor of Science Degree Program in Land Surveying in 1971 to eliminate the widening gap between the educational objectives for Land Surveyors and Civil Engineers. The primary objective of this new curriculum is the preparation of people desiring to become Professional Land Surveyors.

Because this is a new program there are a number of people within the fields of Surveying and Engineering who are not fully aware of its existence. Therefore we are asking for your cooperation in informing potential employers about our program and its available graduates.

There will be 13 qualified graduates in May and 3 in August, 1976 interested in permanent employment. Interested employers should contact Professor John G. McEntyre, School of Civil Engineering, Purdue University, West Lafayette, Indiana 47906.

David A. Bortner
Chairman of the Employment Committee
Purdue Student Chapter, ACSM-ISPLS

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1. A modern Land Surveyor must know how to measure expertly for any purpose. He must understand error propagation and know how to control his errors to the extent feasible for each job and estimate his probable error for statements on plats of survey. He does not need to be a highly educated statistician to do this.
2. He needs to understand photogrammetry enough to make maps or coordinate the efforts of other specialists. He does not need to be a research scientist in photogrammetry nor does he want to be.
3. He is a geodesist to the extent necessary to perform control surveys within limited areas. But, he is not involved in research concerning the earth's size and shape or gravity field.
4. He is a planner and designer to the extent necessary to lay out safe, efficient and appealing new communities. He is not a landscape architect or urban planner but works with such professionals for extensive landscaping and planning problems.
5. He knows how to determine accurate positions and directions but he is not an astronomer.
6. He takes pride in preparing maps and plats to make them portray the intended message in an appealing manner but he

is not a highly educated cartographer.

7. He knows how to program computers for surveying and land sub-division problems but he is not a mathematician or computer science specialist.

8. He understands drainage, sewage flow, alignment and grades of various forms of circulation necessary for land subdivision. But, he is not a structural, sanitary, transportation or other civil engineering specialist.

9. The Land Surveyor discussed here is a property surveyor of the first order. He must understand property law and survey history toward conducting resurveys efficiently, but, he is not a lawyer or historian.

10. He appreciates preservation of survey evidence to the degree that he is proud of his work and identifies his survey monuments with his registration number, provides adequate measurement evidence for monument recovery, prepares clear and concise land descriptions, places his surveys on public record, continues his education to further improve his profession and experiences the joy of being a highly useful servant to the public.

Author: Dr. R. B. Buckner, Professor of Geodetic Science at Ohio State University, Columbus, Ohio.

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