

MAPPING COMMITTEE. THERE ARE TWO WAYS SUCH A SURVEY CAN BE MADE AND FINANCED. THE STATE ITSELF COULD UNDERTAKE THE JOB OR EACH ONE OF THE 254 COUNTIES IN TEXAS COULD UNDERTAKE AN AERIAL SURVEY OF THEIR OWN COUNTY. BUT IF THE COUNTIES SHOULD UNDERTAKE THIS WORK, IT WOULD BE IMPERATIVE THAT A STANDARD SCALE BE ADOPTED SO THAT WHEN THE NUMEROUS COUNTY MAPS ARE PIECED TOGETHER BY A CENTRALIZED BUREAU THEY WOULD MATCH PERFECTLY.

I BELIEVE SUCH A SURVEY OF THE STATE CAN BE MADE FOR \$10,000,000.00 AND THE JOB COULD BE COMPLETED EASILY WITHIN FIVE OR SIX YEARS' TIME. IF THE STATE SHOULD UNDERTAKE THE PROGRAM, THE WORK COULD BE SO ARRANGED THAT THE FINANCING WOULD NOT BE TOO GREAT A BURDEN FOR THE TAXPAYERS.

THIS SUM MAY SOUND A BIT STAGGERING BUT IT WOULD COST MANY TIMES TEN MILLION DOLLARS TO MAKE A COMPLETE GROUND SURVEY OF THE STATE. FOR EXAMPLE, THERE ARE AREAS IN THE BIG BEND COUNTRY WHICH HAVE NEVER BEEN SURVEYED OR MAPPED. IT WOULD TAKE A GROUND CREW MONTHS AND MONTHS TO MAKE A COMPLETE SURVEY OF THIS REGION, WHEREAS AN AIR PHOTOGRAPHER WITH THE PROPER EQUIPMENT AND UNDER THE PROPER ATMOSPHERIC CONDITIONS COULD PHOTOGRAPH THE WHOLE BIG BEND COUNTRY IN TWO WEEKS' TIME, PROBABLY LESS.

I BELIEVE THE MAPPING OF TEXAS MERITS THE INTEREST AND SUPPORT OF EVERY COUNTY JUDGE AND EVERY COUNTY COMMISSIONERS' COURT IN THE STATE. THERE IS A CRYING NEED FOR A COMPLETE BASE MAP AND THE BENEFITS WHICH WOULD RESULT FROM THE POSSESSION OF SUCH A MAP CANNOT BE ENUMERATED.

YOU HAVE MANY PROBLEMS IN SOUTH TEXAS, ESPECIALLY ALONG THE GULF COAST COUNTRY, WHICH WOULD BE EASIER SOLVED THROUGH THE POSSESSION OF AN AERIAL MAP OR PHOTOGRAPHS. PROPER DRAINAGE WILL ENABLE TEXAS TO RECLAIM APPROXIMATELY 12,000,000 ACRES OF LAND ALONG THE COAST FOR THE GROWING OF GRAINS, AND FOR PASTURE LAND.

I HAVE CITED BUT A FEW INSTANCES OF THE NEED AND THE VALUE OF SUCH A MAP AND IN CLOSING WOULD LIKE TO LEAVE THIS THOUGHT - UNLESS ONE IS A HARDY ADVENTURER OR EXPLORER, IT IS DIFFICULT TO GO PLACES WITHOUT AN ACCURATE MAP.

#### PROFESSOR CHURCH'S ARTICLE DRAWS COMMENT FROM COLONEL BIRDSEYE

THE FOLLOWING LETTER FROM COLONEL C. H. BIRDSEYE WAS RECEIVED BY PROFESSOR EARL CHURCH, AUTHOR OF THE ARTICLE, "APPROXIMATE FARM SURVEYS FROM VERTICAL AERIAL PHOTOGRAPHS," PUBLISHED IN PHOTOGRAMMETRIC ENGINEERING FOR APRIL-MAY-JUNE, 1937:

MY DEAR CHURCH:

I WAS EXTREMELY INTERESTED IN YOUR ARTICLE.....IN READING IT, I FOUND SEVERAL APPARENT TYPOGRAPHICAL ERRORS AND ALSO HAD DIFFICULTY IN READING THE FORMULAE PRINTED WITH SMALL CAPS FOR LOWER CASE LETTERS.....

I CONSIDER THE ARTICLE SO INTERESTING, BUT STILL SO HARD TO READ IN THE LITHO-PRINT FORM, THAT I WISH YOU WOULD HAVE IT PRINTED AS ONE OF YOUR REGULAR BULLETINS. I MAKE THIS SUGGESTION, .....BECAUSE I BELIEVE THAT IT WOULD BE AN EXTREMELY VALUABLE ADDITION TO TEACHING TEXT ON PHOTOGRAMMETRY FOR OTHER UNIVERSITIES AND ALSO TO THE AGRICULTURAL ADJUSTMENT ADMINISTRATION FOR USE IN SCALE-CHECKING AND COMPUTING ACREAGE.

BESIDES THE TYPOGRAPHICAL ERRORS IN PHOTOGRAMMETRIC ENGINEERING, WHICH ARE LISTED BELOW, I FIND AT LEAST ONE APPARENT ERROR IN YOUR TEXT AND HAVE SEVERAL SUGGESTIONS WHICH I THINK WOULD IMPROVE YOUR TEXT.

##### ERRORS IN PRINTED TEXT:

PAGE 28, SEC. 1, PAR. 2, LINE 6, **o p** SHOULD BE **o pl**.

PAGE 28, 2ND FORMULA, **F D** SHOULD BE **f D**.

PAGE 31, CHANGE - TO  $\equiv$  IN FOUR FORMULAE AT TOP OF PAGE.

PAGE 34, INSERT GREEK DELTA BEFORE **x'** AND **y'** IN STEPS 4 AND 5.

PAGE 35, DITTO, UNDER DETERMINING BEARINGS OF FARM BOUNDARIES.

PAGE 34, INSERT **y'** ABOVE 43.91.

CHANGE ALL PARAGRAPH REFERENCES TO AGREE WITH TYPED NUMBERS. FOR EXAMPLE, ON PAGE 31 CHANGE "AS IN PARAGRAPH 4" TO "AS IN PARAGRAPH IV."

SUGGESTIONS FOR IMPROVEMENT OF YOUR TEXT

INSERT A REDUCED PLAT OF THE FARM SURVEY, AND ALSO HALF-TONE PRINTS OF PHOTOS V AND VI.

ON PAGE 1 OF YOUR TEXT, JUST ABOVE THE GROUP OF FORMULAE, MAKE THE FIRST SENTENCE READ: "LET US DRAW THE HORIZONTAL LINE  $PQ = OP_1$ ." NO STUDENT OF DESCRIPTIVE GEOMETRY SHOULD NEED THIS EQUALITY REFERENCE, BUT I THINK IT WOULD BE OF ADVANTAGE TO SOME PEOPLE ATTEMPTING TO USE THE METHOD.

ON PAGE 8 OF YOUR TEXT, UNDER THE PHOTO COORDINATES FOR PHOTO VI, I THINK  $b_{VI}$  SHOULD BE  $d_{VI}$ .

ON PAGES 6, 9 AND 10 OF YOUR TEXT, I THINK YOU HAVE CONFUSED THE WORDS BEARING, DIRECTION AND AZIMUTH. I THINK YOUR USE OF THE WORDS "PHOTOGRAPHIC DIRECTION" IS CORRECT, SO LONG AS YOU STATE THAT THIS IS MEASURED FROM THE  $y$  AXIS OF THE PHOTOGRAPH. ALTHOUGH THE MAJORITY OF FARM SURVEYS AND THE CADASTRAL SURVEYS OF THE GENERAL LAND OFFICE DESCRIBE DIRECTIONS AS "BEARINGS," SUCH DIRECTIONS ARE GIVEN EAST AND WEST OF NORTH IN THE TWO NORTHERN QUADRANTS AND EAST AND WEST OF SOUTH IN THE TWO SOUTHERN QUADRANTS AND, SO FAR AS I KNOW, ARE NEVER GIVEN CLOCKWISE FROM THE NORTH THROUGHOUT THE CIRCUMFERENCE. I KNOW THAT SOME UNIVERSITY TEXT BOOKS DESCRIBE AZIMUTH CLOCKWISE FROM THE NORTH BUT I THINK IT IS BAD PRACTICE INASMUCH AS ALL OF THE FEDERAL SURVEYING ORGANIZATIONS DESCRIBE AZIMUTH AS CLOCKWISE FROM THE SOUTH. MY OWN FEELING IS THAT USE OF THE STATE PLANE COORDINATE SYSTEMS, DESIGNED BY DR. OSCAR ADAMS OF THE U. S. COAST AND GEODETIC SURVEY, IS BOUND TO COME INTO GENERAL USE IN CONNECTION WITH ALL LOCAL SURVEYS. IN THIS SYSTEM DIRECTIONS ARE MEASURED FROM THE CENTRAL MERIDIAN OF THE ZONE AND ARE BECOMING WELL KNOWN AS GRID AZIMUTHS, OR PLANE AZIMUTHS, MEASURED CLOCKWISE FROM THE GRID SOUTH. IN THIS CONNECTION, TRUE AZIMUTHS ARE KNOWN AS GEODETIC AZIMUTHS. OF COURSE, MOST OLD DEEDS OF FARMS DESCRIBE DIRECTIONS AS BEARINGS (IN THE FOUR QUADRANTS) AND MOST OF THEM ARE OLD MAGNETIC BEARINGS WITH FEW REFERENCES TO THE YEAR OR TO THE MAGNETIC DECLINATION, SO THAT THEY HAVE LITTLE MEANING IN A RESURVEY OF A FARM.

THEREFORE, I SUGGEST THAT YOU CHANGE THE HEADING ON PAGE 6 OF YOUR TEXT TO "DETERMINING THE AZIMUTHS OF THE BOUNDARIES," AND INSERT A BRIEF DESCRIPTION OF "BEARING," "GRID AZIMUTH" AND "GEOGRAPHIC AZIMUTH," AS WELL AS "PHOTOGRAPHIC DIRECTION," AND STATE THAT THE FIRST MAY BE EITHER MAGNETIC OR TRUE AND IS MEASURED BOTH WAYS FROM NORTH AND SOUTH - DEPENDING ON THE QUADRANT, BUT ALL OF THE LAST THREE ARE MEASURED CLOCKWISE FROM THE NEGATIVE  $y$ -AXIS. I WOULD THEN USE THE TERM "GRID AZIMUTH" IN ALL CASES EXCEPT WHERE YOU MENTION "PHOTOGRAPHIC DIRECTION."

ON PAGE 10 OF YOUR TEXT, YOU GIVE THE DISCREPANCIES BETWEEN THE PHOTOGRAMMETRIC SURVEY AND THE GROUND SURVEY WITH PLUS AND MINUS SIGNS AS THOUGH THE FORMER WERE CORRECT AND THE LATTER INCORRECT. I SUGGEST THAT YOU TABULATE THE GROUND SURVEY DATA FIRST, OR ELSE CHANGE THE SIGNS IN THE TABLE OF DISCREPANCIES. IN ANY EVENT I SUGGEST THAT YOU CHANGE THE HEADING OF THE RIGHT HAND TABLE TO DIFFERENCES, BECAUSE WE ALL KNOW THAT MANY FARMS HAVE BEEN SURVEYED BY GROUND METHODS WITH ERRORS GREATER THAN A GOOD PHOTOGRAMMETRIC SURVEY.....

I HAVE....SUGGESTED...THAT MATHEMATICAL FORMULAE IN SIMILAR ARTICLES BE INKED BY A DRAFTSMAN ON THE COPY FOR THE PHOTO-LITHOGRAPHER, RATHER THAN ATTEMPT TO TYPE THEM IN THE DOUBLE PICA TYPE.

YOURS VERY TRULY,

C. H. BIRDSEYE  
CHIEF, DIV. OF ENGRAVING AND PRINTING