

OKLAHOMA GEOLOGY NOTES!

Summer, Fall, Winter 200

Vol. 67, No. 2 - 4

A PUBLICATION OF THE OKLAHOMA GEOLOGICAL SURVEY



—Inside Cover

Oklahoma's Ames Astrobleme Unusual

The Ames Astrobleme is a large astrobleme in Oklahoma that remained unrecognized as such until 1991 when a prolific oil field was discovered.

The meteorite impact occurred over 450 million years ago. This event was so catastrophic that it created a crater thousands of feet deep and 8 miles in diameter. The crater cannot be seen on the surface of the earth today because it was subsequently buried by 9,000 feet of sediment. The town of Ames is located approximately in the middle of the crater.

According to Enid oilman Harold Hamm, whose company first found oil in the crater, the Ames crater is unusual in that it is one of only a few that is actually producing oil and gas.

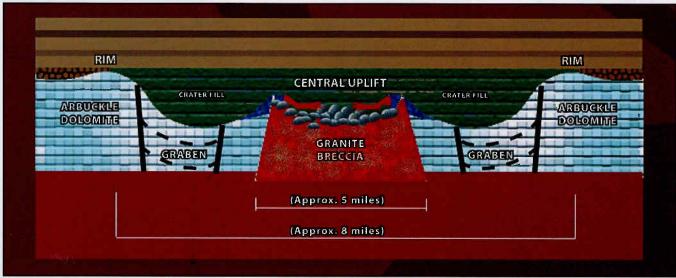
The Ames Astrobleme is one of the most thoroughly studied impact craters on earth. Studies by astrogeologists reveal that if an impact occurs in a petroleum basin there is a 50% chance that the crater will contain commercial hydrocarbons. These craters provide an excellent structure for trapping oil and gas.



This segment of an Ames core shows granite breccias, composed of rock fragments from the impact event and weathering. Note the pores in this rock, which form the reservoir for hydrocarbons in the crater. [Photo courtesy of the Ames Astrobleme Museum.]

Additionally, the significance of meteor impacts is not limited to just oil and gas. The world's largest supply of industrial diamonds and the largest nickel deposits are also found in craters.

The Ames Astrobleme Museum was dedicated August 18, 2007. It features numerous image panels and a video showing the formation of the Ames crater and its discovery as a significant geological and economic resource. The museum was developed by Hamm and one of his companies, Continental Resources.



Profile of the Ames Astrobleme as it exists today beneath the town of Ames. [Diagram courtesy of the Ames Astrobleme Museum.]



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OKLAHOMA GEOLOGY NOTES, ISSN 0030-1736, is published quarterly by the Oklahoma Geological Survey. It contains short technical articles, mineral-industry and petroleum news and statistics, abstracts, notices of new publications, and announcements of general pertinence to Oklahoma geology. Oklahoma Geological Survey at 100 E. Boyd, Room N-131, Norman, OK 73019.

EDITORIAL MATTER: Short articles on aspects of Oklahoma geology are welcome from contributors; please direct questions or requests for general guidelines to the *NOTES* editor at the address above.

This publication, printed by the University of Oklahoma Printing Services, Norman, Oklahoma, is issued by the Oklahoma Geological Survey as authorized by Title 70, Oklahoma Statutes 1981, Section 3310, and Title 74, Oklahoma Statutes 1981, Sections 231-238. 1,000 copies have been prepared for distribution at a cost of \$5.146 to the taxpayers of the State of Oklahoma. Copies have been deposited with the Publications Clearinghouse of the Oklahoma Department of Libraries.

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Oklahoma 2007 Drilling Highlights

Dan T. Boyd

Oklahoma Geological Survey

This article is the third in an ongoing series summarizing drilling activity in Oklahoma. The first article was published in the Winter 2005 issue of the Oklahoma Geology Notes (V. 65, No. 4) and the second article was published in the Shale Shaker, V. 57, No. 6 (May/Jun 2007). Regardless of spud or completion date, the wells discussed here were recorded prior to January 1, 2008. Because much activity is not registered until months or years afterward, a reasonably complete compilation of the activity for a given year cannot be completed before the third or fourth quarter of the following year, by which time it is old news. For this reason notable 2007 wells recorded after January 1, 2008 will not appear in this report, but those from 2006 recorded in 2007 are included. Significant wells

completed in 2007, but registered in 2008, will appear in next year's report.

The data presented here were supplied by IHS Inc (IHS), formerly Petroleum Information/Dwights LLC dba IHS Energy Group, all rights reserved. Without this excellent database this report could not have been completed. All cartography was done by Russell Standridge of the Oklahoma Geological Survey.

General Activity

The number of working drilling rigs is a basic measure of oil and gas activity in any area. The Baker

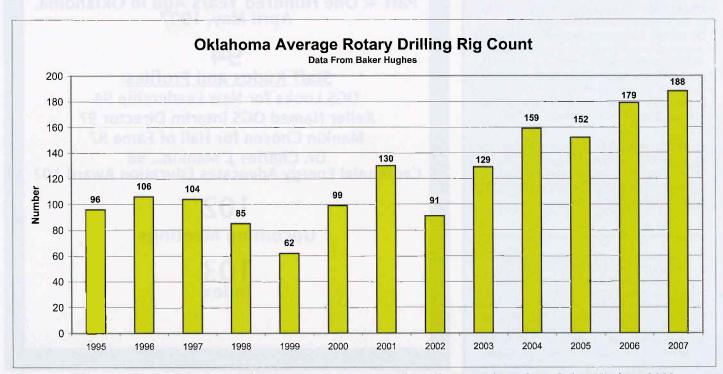


Figure 1. Oklahoma Average Rotary Drilling Rig Count from 1995 through 2007. Data from Baker Hughes, 2008.

Reprinted with permission by the Oklahoma City Geological Society from the Shale Shaker, Volume 58, #5, March/April 2008 Issue.

Hughes Company has tracked monthly rotary drilling rig counts for many years and has compiled these into annual averages for regions all over the world. According to Baker Hughes (2008) the average number of active drilling rigs in Oklahoma for 2007 was 188; up from the 2006 average of 179. Since 2004 the average number of active drilling rigs has remained above 150, reflecting the highest level of sustained activity since the 'boom' years that ended in the mid-1980s (Fig. 1).

Well completion data compiled by IHS (2008) mirror the working rig count. These show that 1999 represents the modern low in terms of drilling activity. Since that time activity has followed the price of natural gas, with the last major drop for both occurring in 2002. Through January 1, 2008 IHS registered a total of 2,240 completions for 2007. This compares to 2,841 completions registered for 2006 and 2,392 registered for 2005 at the same time. If reporting delays are roughly equal, the final number in 2007 should be about 600 less than 2006. The 3,987 completions shown adds the same proportion of completions to the 2007 year-end total as that seen in 2006. The drop in the projected number of completions in 2007, despite a higher average rig count, may be due to fewer of the fast-drilling coalbed methane (CBM) wells and more of the slower-drilling horizontal Woodford Shale wells. This would tend to increase the average rigtime per well, and may explain the drop in completion numbers (Fig. 2).

The price of natural gas is by far the most important factor controlling drilling activity in Oklahoma. A wellhead price in 1999 of \$2.06/MCF was the principal factor that pushed activity in that year to the lowest level in recent history. Prices doubling only two years later (to \$4.02/MCF) more than doubled the number of active rigs and added nearly 4,000 new completions. The last major drop in the average annual price for natural gas occurred in 2002, when a decline to \$2.94/MCF produced a pronounced slump in that year's activity. Since 2003 prices have been near or above \$5.00/MCF, and this has had a corresponding effect on drilling. The average 2007 wellhead gas price in Oklahoma through August was \$6.36/MCF. Because the Henry Hub Spot price range in the first half of the year has been similar to that seen in the second half, it is projected that the 2007 natural gas price for Oklahoma will be roughly flat with 2006 (Oklahoma Corporation Commission, 2007) (Fig. 3).

Years of gas-focused drilling activity have resulted in a fundamental shift in hydrocarbon production in the State from oil, to one in which, on a barrel of oil equivalency of 6 mcfg, 81% of production is in the form

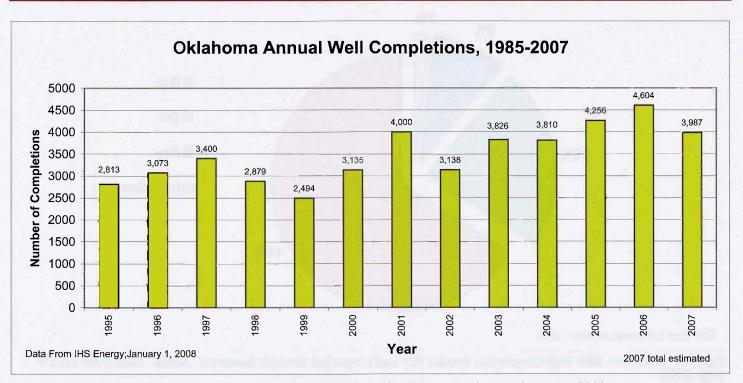


Figure 2. Oklahoma Annual Well Completions from 1995 through 2007. Data from IHS Energy, 2008.

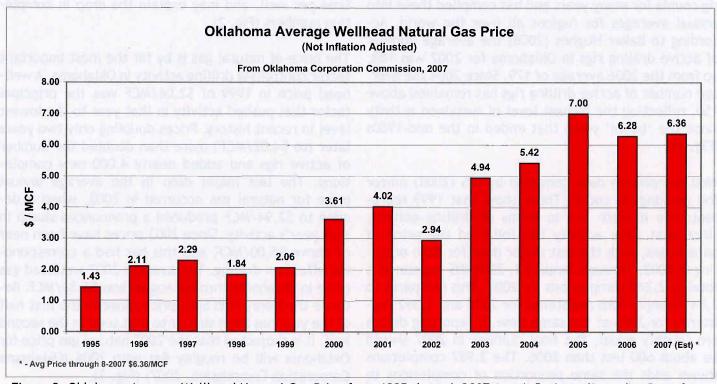


Figure 3. Oklahoma Average Wellhead Natural Gas Price from 1995 through 2007 (not inflation adjusted). Data from Oklahoma Corporation Commission, 2007.

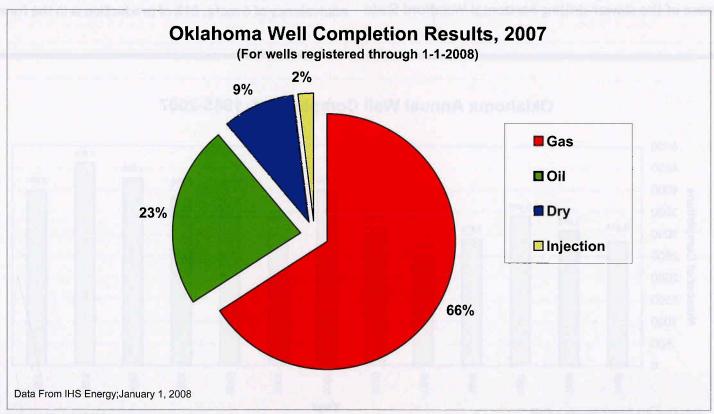


Figure 4. Oklahoma 2007 Well Completion Results (for wells reported through January 1, 2008). Data from IHS Energy, 2008.

of natural gas. This trend continues, with completions in 2007 registered through January 1, 2008 being 66% gas and 23% oil. Three out of four successful completions were made in gas reservoirs, and with more than a 90% success rate, drilling for both oil and gas continues to be overwhelmingly developmental in nature. Dry holes, which comprise all plugged and abandoned wells, including those junked for mechanical reasons, accounted for only 9% of drilling in 2007 (Fig. 4).

Coalbed Methane

Although waning, the most active play in the State continues to be coalbed methane (CBM). Cardott, 2008, reported that at the beginning of 2008 there were about 5,000 CBM completions in Oklahoma, 197 of which have been registered thus far for 2007 (IHS, 2008). This level of activity is 40% below what was reported last year at this time for 2006. If reporting delays remain constant, 2007 CBM completions should total about 323 by this time next year; a major drop from the 543 completions that are registered for 2006 (Fig. 5). As in past years, the bulk of 2007 activity is contained within well-established areas of CBM production, suggesting that the decline in drilling is due

to continued development of the most prospective areas (Fig. 6).

Cumulative Statewide CBM production stands at 429 BCF, with daily production (~180 MMCFPD) representing about 4% of all gas production. The average well in the play now produces 52 MCFPD; a decrease from 63 MCFPD/well last year (IHS, 2008). Reduced drilling, combined with rapid initial declines, has diminished CBM production about 10% in each of the last two years. It is now clear that, as a play, Oklahoma coalbed methane reached its peak in early 2006 at about 225 MMCFPD. Because there are now thousands of wells producing in the play, future CBM drilling can only influence the rate of decline (Fig. 7).

CBM wells in Oklahoma are located in two geologic regions: the Arkoma basin and the Cherokee platform. About two-thirds of the drilling in 2007 targeted the Hartshorne Coal in the Arkoma basin, mostly as horizontal wells. A variety of coals produce on the Cherokee platform, but the most popular in 2007 were the Mulky, Nuyaka, and Riverton; the bulk of these completed in vertical wells (IHS, 2008). The most active CBM operators in 2007, based on completions registered thus far, are Amvest Osage, El Paso, Panther Energy, and Penn Virginia.

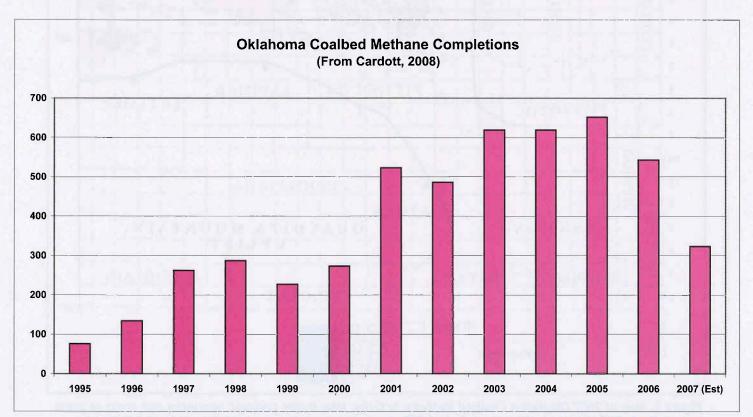


Figure 5. Oklahoma Coalbed Methane Completions from 1995 through 2007. Data from Cardott, 2008.

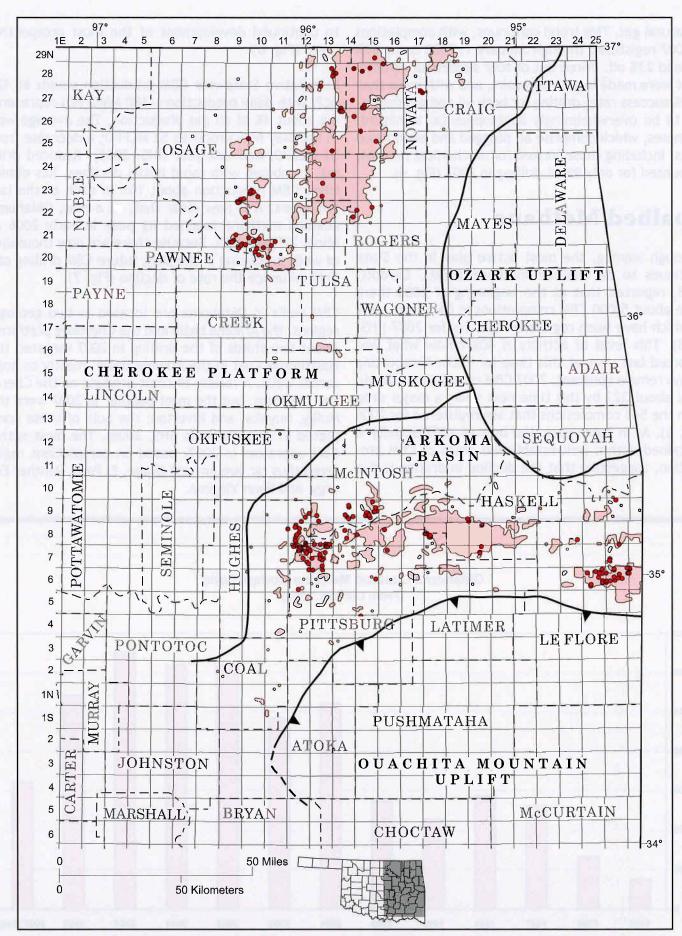


Figure 6. Map of 2007 Oklahoma Coalbed Methane Activity. Map shows geologic provinces and areas of previous coalbed methane production overlain by 2007 completions. *Areas and activity are from IHS Energy*, 2008. Major geologic province boundaries are modified from Northcutt and Campbell, 1995.

Woodford Shale

Oil from the Woodford Shale is being developed in several places in Oklahoma, but the largest impact that this formation is having on activity and production in the state is in the gas play. If completion trends continue, Woodford gas will eclipse coalbed methane as the most active play in the state in 2008. This play continues to grow, with the main fairway in the western Arkoma basin expanding and several satellite areas of production and activity being established around it. Concentrations of Woodford gas production and drilling activity are shown in Fig. 8.

Since early 2004 about 290 Woodford gas wells have been put on production, about two-thirds of these are horizontal wells. Cumulative production for the play stands at 59 BCF, with the average well producing about 660 MCFPD, a per-well rate that is double last year's. 123 gas wells have been registered thus far as 2007 completions, with most activity continuing to be located in a broad trend extending from western McIntosh through western Atoka Counties (Fig. 8). Satellite production along the Ozark uplift and the northern flank of the Ardmore basin began in 2007. Newfield Exploration is the most active operator in the play, at last report operating 140 horizontal wells and 13 drilling rigs.

The following are Woodford gas wells that are considered significant. These are designated in Fig. 8 by the letters <A> through <I>.

In a play in which production drops to a fraction of the initial potential, often in as little as a few weeks,

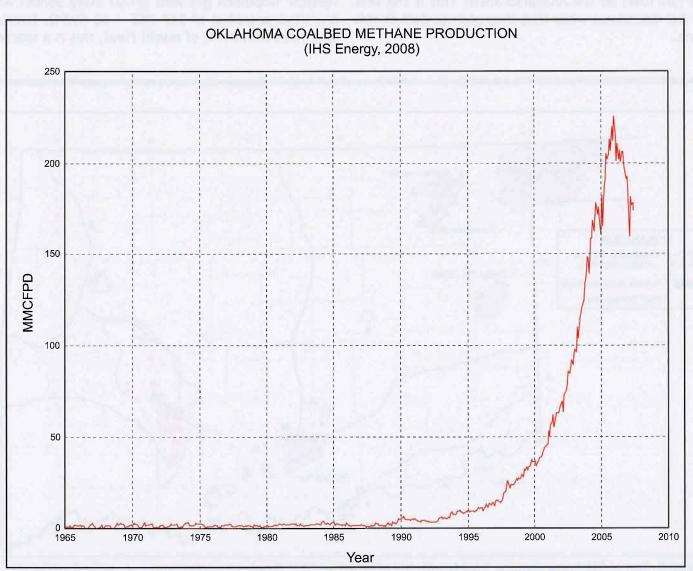


Figure 7. Oklahoma Coalbed Methane Production. Data from IHS Energy, 2008.

Newfield Exploration has drilled a horizontal Woodford well that appears to be bucking the trend. Their #4H-22 Sherman Ellis <A> (Sec. 22-5N-12E) was completed with a reported 5-stage fracture stimulation from 8,500-11,042 ft. After an initial potential of 11,200 MCF + 435 BWPD, in it's first two months of production the well produced at an average rate of about 10 MMCFPD. In another development, indicative of the fine tuning of drilling and completion techniques in horizontal Woodford gas wells, Newfield drilled an extra-long 4,366 ft lateral on their #3H-22 Tollett (Sec. 27-4N-10E). This well, after a ninestage fracture stimulation, had an initial potential of 12 MMCFPD.

There have been many attempts to expand the Woodford Shale gas play in 2007, and success in any of these could dramatically increase the play's prospective acreage. At this writing Devon is drilling their Hancock #-1-36H in western Canadian County <C> (Sec 36-13N-10W) on the Anadarko Shelf. This is the first of five horizontal wells that they plan to drill in this area.

The first horizontal Woodford production was reported in 2007 on the Arbuckle Uplift when Cimarex Energy completed a well in southern Garvin County <D> (Sec.8-1N- 2W) in Eola-Robberson Field. The Hamilton Heirs #4-8H had an initial potential of 1.53 MMCF + 67 BO + 40 BWPD from perforations from 6,960-8,730 ft MD.

In the Ardmore basin, Chesapeake has drilled a horizontal Woodford well in Springer Field <E> (Sec.12-3S-1E) that offsets three vertical Woodford-Sycamore wells. Its initial potential was 1.6 MMCFPD and it is being offset in Section 13. Also in the Ardmore basin, two townships east, BNK has drilled a vertical <F> (Sec. 26-3S-3E) and a horizontal (Sec. 35-3S-3E) Woodford gas well in Baum North Field. These wells had initial potentials of 900 MCF and 2.2 MMCFPD respectively, and have led to the drilling of three more wells in the area. Further south <G> (Sec.21-5S-6E), but still in the Ardmore basin, Range Production completed a vertical Woodford gas well (#1-21 Davy Jones) with an initial potential of 217 MCF + 60 BWPD. Located two miles southwest of Madill Field, this is a sparsely

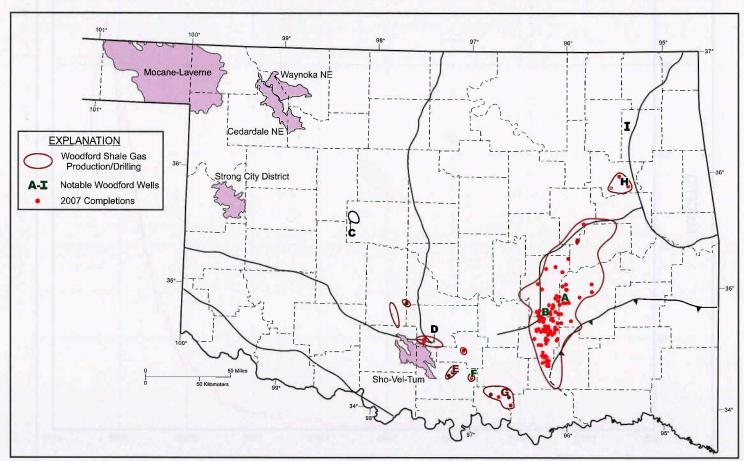


Figure 8. Map of Oklahoma showing 5 fields with the most active 2007 development (exclusive of coalbed methane) and areas of production and drilling activity in the Woodford Shale gas play. Letters show the location of notable wells discussed in the text. Field outlines are from Boyd, 2002.

drilled area that may lead to a spate of horizontal Woodford wells.

In another expansion of Woodford production, Coronado Great Plain and Resource Development Technology LLC have moved to the flanks of the Ozark Uplift. R.D.T drilled 9 (~1,000 ft) vertical Woodford wells in <H> 17N-18E with IP's ranging from 6 to 54 MCFPD. Coronado drilled the first horizontal well in Wagoner County in this township with their Cannon #1-27 <H> (Sec. 27-17N-18E), which was drilled to a measured depth of 4,364 ft and a TVD of 778 ft. Test results are not yet available for this well. Coronado, in their most recent vertical well (McCullough 17-2) located just south in Sec. 17-16N-18E, obtained an initial potential of 210 MCFPD from perforations between 784 ft and 810 ft. Coronado has an additional 11 vertical and one horizontal well drilling within 2 miles of this well. About 35 miles north <I> (Sec. 21-22N-18E), in Mayes County, Coronado has drilled yet another horizontal Woodford well (#21-2H Mitchell- Webster) that at this writing is the northernmost well in the Woodford gas play.

Coal and shale gas dominated activity and highlights in the eastern part of the state, while conventional reservoirs were most important in the western part. The top five reservoirs for 2007, based on completions registered through 1-1-2008, were the: Chester (156), Oswego (129), Woodford and Hartshorne Coal (both with 124), Morrow (92) and Mississippian (81). All but the Woodford and Hartshorne were concentrated on the Anadarko shelf. From a field development standpoint, gas drilling in the Anadarko basin and shelf were again the most important in 2007. The top five fields based on completions registered through January 1, 2008 were: Cedardale NE (100), Mocane-Laverne (70), Strong City District (69), Sho-Vel-Tum (68), and Waynoka Northeast (48) (Fig. 8).

Hundreds of companies drilled wells in 2007, but Chesapeake Operating continues to be by far the most active operator. Their dominance in Oklahoma is vividly illustrated in Fig. 9. Based on completions registered through January 1, 2008, Chesapeake accounted for about 18% of all wells drilled. Their 405 completions are scattered through almost every region of the state, and are about 6 times greater than the second-ranked operator, Apache. In 2007 Chesapeake drilled more wells in Oklahoma than the next nine operators combined.

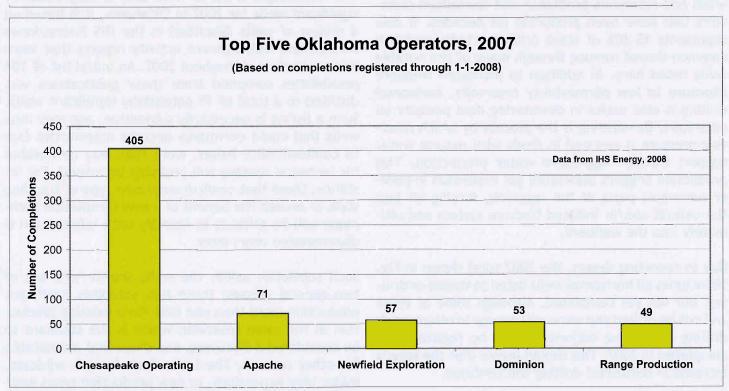


Figure 9. Top 5 operators in Oklahoma in 2007, based on the number of completions registered through January 1, 2008. Data from IHS Energy, 2008.

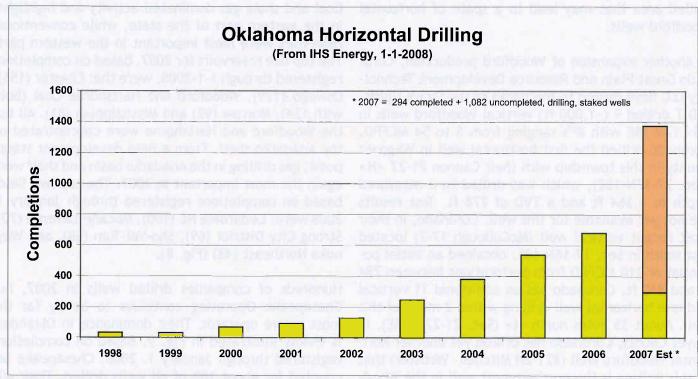


Figure 10. Oklahoma Horizontal Completions from 1998 through 2007. All uncompleted/drilling/staked wells applied to 2007 total. *Data from IHS Energy*, 2008.

Horizontal drilling is by far the most important drilling/completion technique to be recently applied in the state. Its use has made formerly unproductive areas and reservoirs profitable and revitalized reservoirs that have been producing for decades. It now represents 15-20% of state drilling activity and is a common thread running through many of the notable wells listed here. In addition to increased wellbore exposure to low permeability reservoirs, horizontal drilling is also useful in dewatering dual porosity oil reservoirs. Dewatering is the process by which reservoir pressure is reduced in fields with natural water support through aggressive water production. This production triggers associated gas expansion in poorer (unswept) parts of the reservoir, forcing oil into the natural and/or induced fracture system and ultimately into the wellbore.

Due to reporting delays, the 2007 total shown in Fig. 10 includes all horizontal wells listed as staked or drilling, but not yet completed. Although some of these will not be drilled and some will appear in other year's drilling totals, the majority should be registered as completed in 2007. This should insure that the steady increase in horizontal drilling will continue.

Significant Wells in 2007

The following is a list of what are, or may become, significant wells for 2007 in Oklahoma. It is based on a review of wells described in the *IHS EnergyNews on Demand* Midcontinent activity reports that were released online throughout 2007. An initial list of 104 possibilities compiled from these publications was distilled to a total of 15 potentially significant wells. Such a listing is necessarily subjective, and may miss wells that could eventually become noteworthy. Due to confidentiality issues, wells that may be notable for technical reasons will probably be missed. For instance, those that confirm some new type of trapping style or proved the benefit of a new completion technique will be difficult to identify until information is disseminated years later.

Such subtleties aside, the wells shown here are of two general classes; those that establish significant production more than one mile from existing production in the same reservoir, which is the standard to be considered a discovery, and those that are notable for other reasons. The latter include rank wildcats, major play expansions, or new production types and/or completion techniques. The following are wells re-

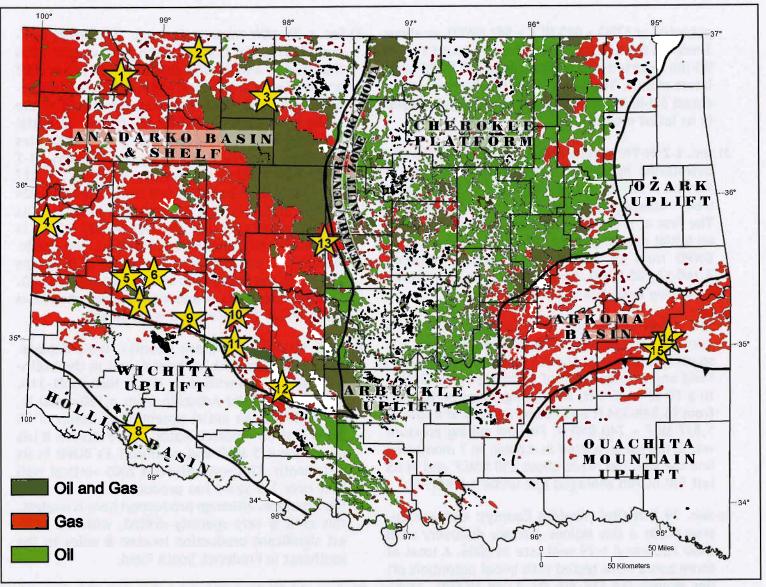


Figure 11. Map of Oklahoma oil and gas fields, distinguished by GOR, showing location of significant wells reported for 2007. Modified from Boyd (2002). Major geologic provinces boundaries modified from Northcutt and Campbell (1995).

ported as completed in 2007 that are considered significant (Fig. 11).

- 1) Sec. 23-26N-20W (Harper County): Patron Energy LLC has begun a Hunton dewatering program on the Anadarko Shelf between Cedardale and Lovedale Fields in the southeastern part of 26N-20W. The central water disposal well, the #1-23 Carter, was spudded in November 2006 and is projected to 9,800 ft as a vertical hole in the Arbuckle. At last report there were 10 horizontal Hunton producers drilling in the surrounding sections with two additional staked locations.
- 2) Sec. 4-27N-14W (Woods County): Chesapeake made a vertical Hunton discovery 6 miles northeast of the nearest Hunton producer. The Mackey #1-4, which was perforated from 5,714-5,726 ft,

had an initial flowing potential of 475 BO + 567 MCFPD with no water on an 18/64 in. choke and a FTP of 856 psi. The well produced about 22 MBO in its first two months, with no reported gas, and averaged 475 BOPD in its last reported month. This area was relatively unproductive prior to 2005, when Avalon and Chesapeake began a large-scale drilling program. Since that time, in an area where previously there was one productive well, there are now 10 producers, 20 drilling wells, and 3 staked locations.

About $\frac{1}{2}$ mile to the north, the Chesapeake Howell #1-33H (Sec 33-28N-14W) is the first horizontal Mississippian well in Woods County and is a horizontal twin to a vertical Avalon well. The horizontal well had an initial flowing potential of 467 BO + 750 MCF + 720 BWPD, against the vertical well's

- potential of 62BO + 685 MCF + 582 BWPD. In about 3 months the horizontal well has produced 14,595 BO (no reported gas) and averaged 235 BOPD in its latest month. The vertical well in 8 months produced 6,140 BO + 14 MMCF and averaged 5 BOPD in its latest month.
- 3) Sec. 2-24N-9W (Alfalfa County): In another Hunton dewatering operation, Chesapeake is drilling a vertical Arbuckle disposal well and four horizontal wells radiating from the same surface location. The first of these, the Johnnie Davis #1-34H, had an initial pumping potential of 216 MCF + 10,262 BWPD from an open-hole completion between 8,160-12,700 ft MD. At last report the other three producing wells had yet to be completed.
- 4) Sec. 4-14N-25W (Roger Mills County): B&W Operating completed their #1-4 Magpie discovery in a sparsely drilled area about 2 miles north of Reydon Field and 2 miles south of Hamburg Field. Drilled to a TD of 16,575 ft, the Springer was perforated from 16,348-354 ft and flowed initially at a rate of 1,837 MCF + 240 BWPD. Flowing tubing pressure was 8,100 psi on a 8/64 in. choke. In 7 months on line the well has made about 250 MMCF and in its last full month averaged just under 1 MMCFPD.
- 5) Sec. 29-11N-19W (Washita County): Cimarex Energy made a Des Moines / Atoka discovery with their Patricia # 1-29 well late in 2006. A total of three zones were tested with initial potentials of: Des Moines (14,314-316 ft) 4,049 MCFPD, Atoka (14,930-948 ft) 225 MCFPD, and another Atoka zone (15,820-931 ft) 1,275 MCFPD. In its first 11 months on production the Patricia has made 1.7 BCF and in its last month was producing at a rate of 1.5 MMCFPD. Cimarex has since drilled a successful confirmation well immediately to the northwest (#1-30 Spitz) and Chesapeake another two in the sections to the south.
- 6) Sec. 10-11N-18W (Washita County): Chesapeake completed the first horizontal well in Washita County early this year in the Des Moinesian Granite Wash. Their #2-10H Walton was completed from 13,079-15,364 ft MD with an initial potential of 3,766 MCF + 317 BC + 83 BWPD. Flowing tubing pressure was 4,278 psi on a 16/64 in. choke. In its first 9 months of production this well has made about 900 MMCF and continues to flow at a rate of 2.1 MMCFPD. Chesapeake is especially active in this play, with 11 horizontal wells drilling and one staked location, all within 2 miles of the Walton well.

- 7) Sec. 6-9N-18W (Washita County): JMA Energy completed an Atoka Granite Wash well in late 2006 that lead to a successful confirmation well in 2007 and four new wells that were drilling at last report. The West Trust #1-6 was completed in the Atoka Wash from 14,770-15,338 ft with an initial potential of 2,563 MCF + 44 BO + 111 BWPD. This discovery was followed up by the Thomas #1-7 (Sec. 7-9N-18W) that produced 5,054 MCF + 217 BO + 3 BWPD on an initial test from 15,070-15,424 ft. The discovery well produced 260 MMCF in its first 10 months on line, but was at 400 MCFPD in its last month's production. However, the confirmation well has produced 854 MMCF in 5 months and continues to produce at a rate of 5.7 MMCFPD. The nearest Atoka production is from the Atoka Lime, about 2.5 miles to the northeast.
- 8) Sec. 31-1S-18W (Tillman County): Deka Exploration drilled the first horizontal well in the Hollis-Hardeman basin with their Mittie Nichols #1-31H. Completed in the Arbuckle from 6,350-6,400 ft, the well had an initial potential on pump of 95 BOPD with no reported water. In five months it has made about 5 MBO and produced 33 BOPD in its last month. This well offsets a 2005 vertical well that over 2.5 years has produced 8,600 BO from the Arbuckle. Although production here is modest, this area is very sparsely drilled, with the closest significant production located 8 miles to the southeast in Frederick South Field.
- 9) Sec. 14-8N-15W (Washita County): BP America made a discovery in another lightly drilled area in southern Washita County. The Prichard #1-14 was completed in the Morrow from 17,358-17,365 ft for an initial rate of 2,025 MCF + 30 BWPD. FTP was 628 psi on a 40/64 in. choke. At last report this well had not yet been put on line. Nearest production is from the Springer about 2 miles to the southeast. This discovery is being delineated by the BP Cristal #1-24 (Sec. 24-8N-15W) located immediately to the southeast.
- 10) Sec. 32-9N-11W (Caddo County): Crawley Petroleum has made a Springer discovery in their #1-32 Wild Rosie. Located 1.25 miles southwest of Marchand production in the Eakly-Weatherford Trend, the well was completed from 17,552-620 ft flowing 2.1 MMCF + 11 BWPD. At last report the well had produced 70 MMCF in its first month on line. The closest Springer production is a 1984 Anadarko Land & Exploration well located 2 miles southeast. Crawley has plans to delineate this dis-

covery and has spaced the three surrounding sections (5, 6, and 31), presumably for future Springer tests.

- 11) Sec. 6-6N-11W (Caddo County): St. Mary Land & Exploration made an excellent Springer discovery in the #1-6ST Norma Jo. The well flowed from two zones between 20,608-21,410 ft at a rate of 9,442 MCF + 23 BWPD with an FTP of 7,000 psi on a 16/64 in. choke. In its first full month of production the well has made 130 MMCF. The closest Springer well is located 2.5 miles to the northwest and is a Sanguine well that had an IP of 2,825 MCFPD. This well has produced for 3 years, has made about 3.5 BCF, and in its last month was still producing 2.0 MMCFPD. St. Mary is drilling a delineation well to the southeast in section 7 (#1-7 Daryl) that was at a total depth of 20,624 ft at last report.
- 12) Sec. 19-3N-7W (Grady County): Ward Petroleum made what appears to be an excellent Springer discovery ½ mile southwest of a non-commercial Springer well in the same section. The Young #1-19 had an initial potential of 8.6 MMCF + 110 BWPD from perforations from 18,792-19,014 ft, and in its first full month produced 111 MMCF. The offset well, the Nortex Graham #1-19 (Sec.19- 3N-7W), had an initial potential of 637 MCF and was abandoned after producing only 291 MMCF. Ward is in the process of following up this discovery with the drilling of a well in Sec. 24-3N-8W (Graham #1-24) that was spudded in June.
- 13) Sec. 30-14N-4W (Oklahoma County): Chesapeake completed the first of three horizontal Hunton wells in a part of Edmond West Field that began production in the mid-1940s. The initial potential on pump for the BA #3- 30H well was 582 BO + 552 MCF + 1780 BWPD. This well has two laterals, each about 3,800' long. Chesapeake is drilling two more horizontal Hunton wells immediately to the northwest which are among 5 horizontal Hunton wells now drilling in Edmond West Field. These wells are operated by Avalon, Petrohawk, and Beta Operating companies.
- 14) Sec. 35-7N-22E (Latimer County): Mentioned in last year's report, BP America drilled the first horizontal Simpson test in Red Oak-Norris Field. The well in 8 months has produced 318 MMCF and in its last month was producing at a rate of just under 1 MMCFPD. Only the fourth Simpson well in the field, the Blair Unit #35-12 is located more than a mile northeast of a vertical Simpson well that produced an average of about 650 MCFPD in its first

- four months. The new horizontal well was completed with a slotted liner from 12,506-15,050 ft and tested at an initial rate of 2,937 MCFPD with no water reported.
- 15) Sec. 20-6N-22E (Latimer County): Another BP America horizontal well was completed in Red Oak-Norris Field this year that is notable because it is the first horizontal Red Oak Sandstone completion in the Arkoma basin. Completed from a horizontal lateral from 8,121- 10,897 ft, the Martin C Unit #10 had an initial potential of 4,233 MCFPD with no reported water. In its first three months of production the well made 297 MMCF, with a rate in the last month of 2.5 MMCFPD.

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NOTE: THE DATA IN THIS REPORT ARE BELIEVED TO COME FROM RELIABLE SOURCES; HOWEVER, THE VERACITY OF THE DATA CANNOT BE GUARANTEED BY THE PUBLISHER. ANYONE PURSUING AN EXPLORATION PROGRAM FOR HYDROCARBONS SHOULD VERIFY THE DATA BEFOREHAND AND CERTAINLY BEFORE COMMITTING TO ANY FINANCIAL INVESTMENT.

Two Companies Schedule "A Day in the Field"

Jane Weber Oklahoma Geological Survey

What could be better for the petroleum professional staring at images of logs or cross sections on a computer monitor day after day than spending a work day in the field? If the worker is trying to characterize a gas shale reservoir, he has probably discovered that what he learned in the past about the generation, migration, and pooling of petroleum fluids does not fully explain what is happening in his reservoir. It has been known for some time that black shales can be good source rocks, but now they must be considered as potentially good gas reservoir rocks as well. Questions arise:

- Where does all the gas hide in a shale?
- Aren't shales supposed to have limited porosity and low permeability?
- Assuming economic quantities of gas are present, how can the rock be coaxed to release it?
- What is the best way to drill or frac a gas shale?

Viewing and examining outcrops of the same rock formation(s) being studied on the computer is one way to better understand the rock and, perhaps, gain new insight about it as a reservoir rock. This is the purpose of a field trip.

In October, 2007, the Oklahoma Geological Survey (OGS) led two company groups into the field to see, feel, and experience the Woodford Shale, a potentially important gas shale of current interest in Oklahoma. The Woodford is a Devonian-Mississippian organic-rich black shale litho-strategraphically equivalent to the New Albany, Antrim, Ohio, and Chattanooga Shales in other states. Thirty-five employees from Chesapeake Energy were transported by bus to three Woodford exposures; a smaller group from St. Mary Land & Exploration, traveling in more maneuverable vans, was able to visit six outcrops. An added feature for the bus group was the incorporation of a GPS unit attached to the bus win-

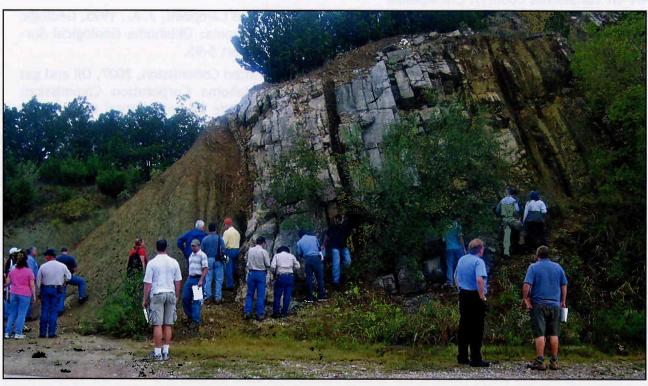
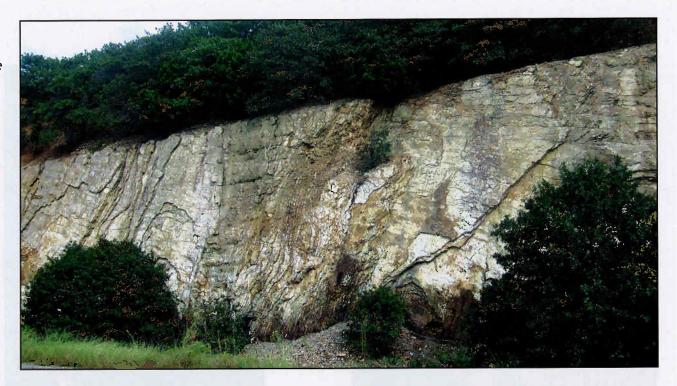


Figure 1. Sylvan to Caney transition (first stop). Photo by Jane Weber, OGS.

Oklahoma Geology Notes • v. 67, no. 2 - 4 • Summer, Fall, Winter 2007

Figure 2. The Woodford Shale (third stop). Photo by Jane Weber, OGS.



dow. The GPS signal appeared as a moving red dot on a digitized geologic map of the area projected from a laptop onto the bus video screens.

The almost-vertical positions of beds in the Arbuck-le Mountains along the southbound I-35 trip route meant viewers could follow their own passage over one geologic unit after another. In a matter of minutes, they traversed rocks dating from the Pennsylvanian and Mississippian, then the Devonian, Silurian and Ordovician, and finally the Cambrian.

Detailed geologic information about the field trip stops is presented in Woodford Gas Shale Field Trip, available as Open-File Report 1-2007 from the Survey. In brief, the stops included:

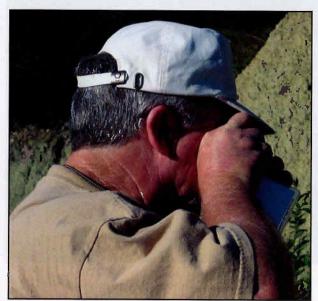
- Transition of the non-producing Sylvan Shale to the Caney Shale (Fig. 1), which is possibly both a source and a reservoir rock. The Woodford Shale, between the two, is not well exposed at this locality. Galen Miller, OGS geologist at the time of the field trips, led the discussion.
- Overturned basal Woodford. At this site, the Hunton-Woodford contact lies under the road bed. Galen Miller provided details.
- Woodford Shale (Fig. 2). Brian Cardott, OGS geologist in charge at this stop, noted it was the sampling locality for early hydrous pyrolysis experiments. He added that the Woodford is the

oldest rock in the Arbuckle Mountains that contains vitrinite.

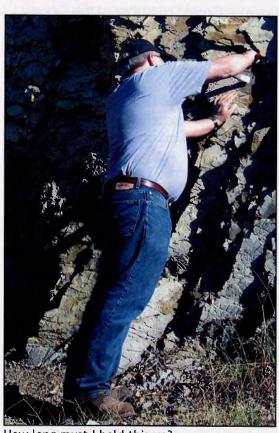
- Middle (Delaware Creek) member of the Caney Shale along Phillips Creek. According to Rick Andrews, OGS geologist, this is one of the best representative outcrops of the Caney Shale in southern Oklahoma. It is easily reached (just off I-35) and well exposed. The Caney is of particular interest because it is closely related timewise to the Barnett Shale in Texas and the Fayetteville Shale in Arkansas.
- Complete section of the Woodford Shale along Henry House Creek. From the base of the outcrop on the north, where contact with the underlying Hunton carbonates is hidden in a stream bed, to the top of the outcrop on the south, one can view an entire section of Woodford Shale (231 ft in vertical thickness). Stan Paxton, US Geological Survey geologist, obtained special permission from the private property owner to take the smaller group to this field location. Paxton has been involved with spectral gamma-ray measurements at this site.
- Woodford Shale exposure in McAlister Cemetery Quarry. Reportedly, a complete Woodford section is present. Stan Paxton has also performed spectral gamma-ray studies here. Two significant features at this stop are noticeable bitumen accumulations within networked fractures and especially large calcite concretions.

Views from "A Day in the Field"...

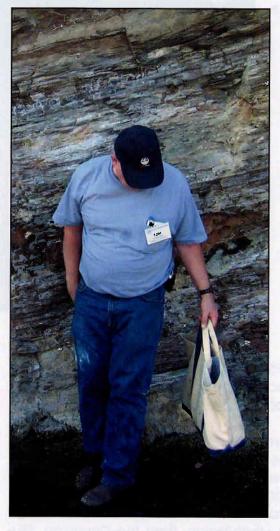
Photos by Jane Weber, OGS.



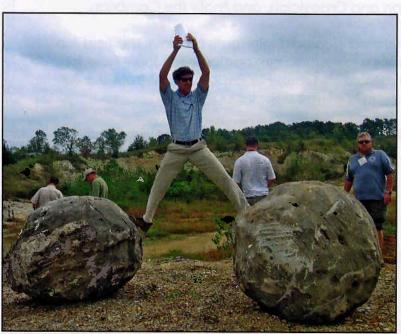
Getting up close and personal with a rock.



How long must I hold this up?



Whaddya mean my bag and shoes don't match?



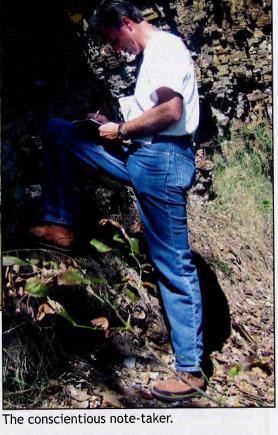
Look, ma, no hands! (concretions in McAlister Cemetery Quarry, sixth stop).

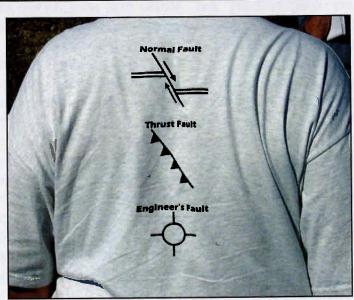


The Woodford — in a scenic, tranquil setting along Henry House Creek (fifth stop).

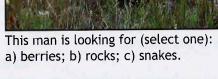


A fossil find...





Dressed for the occasion...



Gas Reservoir Evaluation with Limited Data Workshop

*Richard G. Hughes*Louisiana State University

On August 8, 2007, the Oklahoma Geological Survey sponsored a workshop entitled "Gas Reservoir Evaluation with Limited Data" at the Moore-Norman Technology Center in Norman, Oklahoma. The instructor for the workshop was Dr. Richard Hughes of Louisiana State University. Sixty-seven registrants, composed of industry operators, consultants, academicians, and governmental agency specialists, attended.

Quite often, when operators are evaluating bid values for properties that are available for acquisition, there is very limited data available to perform an appropriate analysis. The most common information available is production and well data from commercial or government database systems. These data usually include monthly production data, some drilling and completion information, an initial production test for the well, and maybe some well-log information. The workshop focused on showing how these data can be enough to constrain the property evaluation and to develop a bid value, while also recognizing the uncertainties in that evaluation. It was suggested that evaluation of the uncertainties is a bit easier in gas reservoirs because of the predictable properties of gas systems.

A property evaluation begins by developing a map of the productive formation. Tops of formations and perfo-

rated intervals are usually available in public data stores, but the quality of that data can be suspect; however, it is still a starting point for developing a view of the reservoir. For gas systems, volumetric estimation of gas in place is strongly dependent on estimates of the reservoir's bulk volume, porosity, initial water saturation, and initial pressure. Unless well logs are available (which is an unusual case), maps made from public data stores have a high degree of uncertainty except for initial pressure values for the reservoir because initial production tests and drilling mud weight can be used to constrain the uncertainty.

Another way of obtaining gas-in-place values is through material balance calculations, which, for gas reservoirs, are more strongly tied to first principles than oil or condensate reservoirs. Complications arise from pore and connate water compressibility and from the influx of water. Initial static reservoir pressures and gas properties may be available in public databases; however, pressure measurements tied to cumulative production values, which are the basis for material balance calculations, are less likely to be available.

The most common practice in performing a property evaluation is to utilize monthly production data available from either a commercial vendor or the state. Monthly rate-time plots

are used along with standard decline analysis to project the potential recovery for the property. The predominant assumption is that future production performance can be modeled on past performance. Very little physical insight, however, can be obtained from such an evaluation. This method cannot adequately predict whether performance enhancement is possible. In these assessments, it is rare to tie decline performance to the gas-in-place value obtained from volumetrics or material balance. However, this is possibly one of the fundamental steps necessary to constrain the assessed value of the property because a discrepancy between the two methods indicates that parameters for one or both methodologies were incorrectly evaluated. A consistent assessment of the property should yield nearly identical values for the reservoir volume.

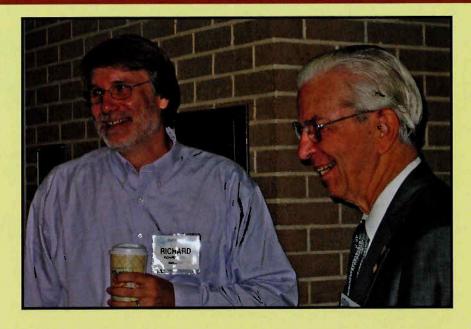
Rather than using decline analysis to project reservoir performance, it is better to try to match well productivity from monthly data with well-performance values estimated from reservoir and production system parameters. The pseudo-steady-state solution to the diffusivity equation has been taught in undergraduate petroleum engineering courses for many years. For gas systems, two solutions have been popular: the pressure-squared solution and that developed using the real-gas pseudo-pressure. The pressure-squared solution is lim-

Author and presenter Dick Hughes and retired OGS Director Charles Mankin. Photo by Jane Weber, OGS Staff.

ited to low pressure systems; whereas, the pseudo-pressure solution has no such restriction.

A spreadsheet-based function to compute real-gas pseudo-pressure, developed by Dr. John McMullan while he was at Louisiana State University (now with Marathon Oil Company), was presented and made available to attendees along with a spreadsheet template to compute the pseudosteady-state, well-inflow performance. A function to compute tubing performance for wells using the Cullender and Smith method also was provided. The template and functions were used to estimate well-performance behavior for an example that was obtained from the Oklahoma Corporation Commission web-based data repository. By changing a number of wellperformance parameters, the instructor evaluated the range of sensitivities of well-performance behavior.

Once a suitable well-performance evaluation is performed for wells in a particular field, well performances should be tied to the estimate for the gas in place. Recorded decline values, in combination with a material balance and aggregated well-performance estimates, can then be used to develop a history match of sorts, which can be used to project possible recovery scenarios with more confidence. Recovery scenarios are not only linked to the material balance,



but also are constrained to the reservoir and well configuration that make for better evaluations of possible productivity enhancements.

The final two topics of discussion were related to wells and fields in which an operator had more data or control. If daily rate and pressure data are available, advanced decline analysis (often called production data analysis) can be performed on the property. Phillips Petroleum began performing production data analysis in the early 1980s. The original method combined standard Arps' decline analysis with constant pressure solution to the diffusivity equation to provide the ability to obtain some reservoir parameters (similar to pressure transient testing) as well as constraints to the Arps' decline parameters. These tools required rate-time information with some accuracy and stability. The evaluation needed to be "reinitialized" fairly often in most situations resulting in a fairly tedious and moderately uncertain evaluation. Modern tools combine rate and time data with an estimate of flowing, bottomhole pressure (often calculated from the flowing wellhead pressures) to obtain an analysis very similar to standard pressure transient testing. In addition to reservoir rock and completion parameters, these modern tools use a material-balance, time definition that provides very tight constraints to the estimated gas in place as well as the decline in reservoir pressure. The tools are especially helpful if the rate-pressure-time data is recorded at high frequency—daily or even hourly data tend to work best.

Finally, to evaluate operated properties better, Dr. Hughes encouraged attendees to plan and to evaluate state-mandated, deliverability tests to maximize reservoir-property evaluation. The mandated tests typically are performed without much planning, simply to provide a report to the state. With a small amount of planning, however, the tests can provide data to evaluate the property for productivity enhancement and/or sale. Additional costs associated with selecting test rates and pressure monitoring should be a fairly minor addition to standard testing and could make a significant difference in overall property evaluation.

-Special Oklahoma Centennial Series

A HUNDRED YEARS AGO IN OKLAHOMA APRIL – MAY 1907

Compiled by Kenneth V. Luza Oklahoma Geological Survey, 2007

klahoma began a yearlong centennial celebration in January 2007. A monthly summary of the following articles and/or wire-service stories provides some insight into what took place locally, nationally, and worldwide in 1907. Some period photographs are included to show what Oklahoma looked like 100 years ago. Articles and information about geology and mineral resources are emphasized. Articles, or their abridged versions, were abstracted for republication from The Daily Oklahoman (now The Oklahoman), an Oklahoma City newspaper, unless otherwise specified. Every effort was made to preserve the original tone and expression of each feature. In some cases typesetting errors may have been overlooked and may have led to misinterpreting the reporter's meaning or intent.

The Daily Oklahoman had a daily average circulation of 19,137 in April 1907 and 19,859 in May 1907. The newspaper was published daily except for Monday; and cost 5¢ at the news stand or 45¢ per month when delivered by carrier. The articles are republished with permission from The Oklahoman.

April—On April 1, Henry M. Scales was elected mayor of Oklahoma City. Charles Post defeated incumbent John Hubatka in a hotly contested race for Chief of Police. A tornado killed fifteen people in Louisiana, Mississippi, and Alabama on April 5. China experienced an unprecedented famine in 1907; over 20,000,000 people died. The Harry K. Thaw jury was hopelessly deadlocked. The presiding judge ordered a second trial. Oklahoma Gas and Electric Company planned exten-

sions to its electric lighting system in the northern parts of Oklahoma City. The State Fair Association finally settled on a location for the first state fair in Oklahoma City. On April 15, an earthquake devastated the cities of Chilpancingo and Chilapa, Mexico. The Oklahoma Constitution Convention adjourned on April 19. Three miles southeast of Sapulpa, the largest gas well in Indian Territory was brought in. New discoveries of oil were found near Okmulgee and Muskogee. April 26 and 30 had record low temperatures of 35°F and 32°F, respectively, which still stand today. On April 29, a third record low temperature was set at 34°F, which was repeated in 1908.

(329)



Anadarko, Oklahoma, 30 days old; photograph taken east from courthouse square on B Street. Wichita and Caddo lands opened by lottery June 9 to August 6, 1901. Holmes Collection, Western History Collections, University of Oklahoma.

Thursday, April 4, 1907, p. 8

OIL EXCITEMENT RUNNING WAY UP

SCRAMBLE FOR LEASES FANCY FIGURES IN NEW MUSKOGEE FIELD

Muskogee, I. T., April 3.— The oil excitement at Muskogee increases every day. Charles T. Madison, manager of the Muskogee oil refinery, today went out to the new oil well, and after making a test, announced that the well was flowing 28 barrels of high grade oil every hour or 672 barrels of high grade oil per day, and they drill only down twelve ft in the sand.

This official announcement of the size of the well caused tremendous excitement. Tonight 50 oil operators from Tulsa and Bartlesville are on the ground trying to get leases and to establish headquarters for operations. As soon as the announcement was made that the well was a big one, prices for leases commenced to jump. A half section near the well that was leased for \$50 three weeks ago went up to \$16,000 for a bonus and 10% royalty of the oil to-

day, and the owner of the lease refused to take it.

0380

April 4, 1907, p. 8

An advertisement in the paper appeared as follows: The clock ticks and ticks the time away, shortening up our lives each day. Eat, drink, and be merry, for some day you will be where you can't get Rocky Mountain Tea. Free samples at Westfall Drug Co.

(35)

Friday, April 5, 1907, p. 1

The Overholser Opera House presents Weber & Field's \$25,000 production "HOITY-TO-ITY" on Sunday March 3rd. Prices: 25¢ to \$1.50.

(3E)

Friday, April 5, 1907, p. 1

BAN IS PUT ON NIGHT FIRES

CHIEF KESLER THREATENS TO PROSECUTE VIOLATORS OF CITY ORDINANCE

"Citizens of Oklahoma City must stop building bon fires at night and on windy days," said Fire Chief Mark Kesler yesterday. "This fire department is not a toy. We can't place a wagon guard every time some one wants their yard burned."

"I had a call yesterday from Washington and Broadway. Some fellow had started a fire, burning some trash. A Little boy noticed the blaze and turned in an alarm. All departments made the run, tiring the horses and wearing the equipment, just because this man waited until after dark to burn his stuff. Now that kind of work must quit. If it can't be stopped peaceable, we will have offenders arrested and we'll hang a fine on them. There is an ordinance which prohibits burning of trash within the fire limits, and within the city limits at night and on a windy day."

(380)

April 5, 1907, p. 1

GREAT CROPS OF FRUIT PREDICTED

AGRICULTURAL BOARD SEC-RETARY URGES GROWERS TO PREPARE TO HANDLE IT

Guthrie, Okla., April 4.— C. A. McNabb, Secretary of the Oklahoma Board of Agriculture, is urging an immediate organization of the fruit growers of Oklahoma to take care to the coming crop. He says: "If the promise of the present time is fulfilled, and no untoward circumstances befall the fruit crop, this year will be as great as any two ever before gathered in Oklahoma. Now is the time for the growers to begin to prepare for handling it. Last year carloads of Elberta peaches fell on the ground and rotted in Oklahoma, largely because sufficient packages for shipping them were not on hand."

(380)

April 5, 1907, p. 1

LASS IS A TYPHOID GARDEN

BACILLI THRIVE AND SO DOES MARY, BUT SHE LEAVES STRING OF FATALITIES

New York, April 4.—Mary Mallon, a human culture tube in whom constantly are developed millions of germs of typhoid fever, has never had the disease and is seemingly immune. She has fallen into the hands of the health authorities and is now under observation in the Willard Parker Hospital. George A. Sop-

er, a sanitary inspector, hunts typhoid germs out as Sherlock Holmes runs down criminals. He had her sent to the hospital for observation.

(38)

April 5, 1907, p. 4

This advertisement for Cottolene appeared below:

Horseless Carriages, Wireless Telegraphs, Now Lardless Cooking

Improvement is the order of the age. There was a time when Lard was considered the only shortening. Today, the only people who use lard for shortening and frying purposes are those who are not familiar with the virtues of Cottolene. It pays to be abreast of the times. Cottolene is not only superior to lard from a health standpoint, being a vegetable rather than an animal product, but it will make more palatable food than lard; and it is more economical than lard because, being richer, onethird less is required than lard or cooking butter. [Cottolene is made from cotton seeds.]

C380

DEATH IN STORM'S WAKE: TORNADO KILLS FIFTEEN

THREE STATES SUFFER BIG LOSSES

Louisiana, Mississippi, and Alaþama in Wind's Path

New Orleans, April 5.—Probably fifteen lives were lost today by a tornado that swept across portions of three gulf states and which was traceable for a distance of 300 miles. The tornado moved from west to east crossing the southern extremity of Louisiana and Mississippi and striking into Alabama for a short distance. Portions of four towns were devastated and damage approximating \$500,000 was done.

(380)

April 6, 1907, p. 9

BALL SERIES TO OPEN HERE TODAY

TULSA TEAM WILL CONTEST WITH THE METS AT SPORTS-MAN'S PARK

The Tulsa team of the Oklahoma State Baseball League will open a series of two games with the Metropolitans at Sportsman's Park this afternoon. The Oilers are touted as the strongest team in the state league and will give the Mets a lively scrimmage.

(380)

GRIM DEATH IS STAR-ING AT MILLIONS Greatest Agony in the Chinese Famine Yet to Come

Washington, April 6.— The Red Cross today issued the following statement in regard to the Chinese famine. "The famine in China is unprecedented in severity and the period of greatest agony is yet to come. Many weeks must pass before there will be relief from new crops, and millions today are kept alive only through the contributions of the American people who have sent their donations to the national Red Cross at Washington and the Christian Herald of New York." [Over 20,000,000 people died in the Chinese famine of 1907.1

C380

April 7, 1907, p. 6

WILL BUILD AN INTERURBAN LINE

The Oklahoma City Rapid Transit Railway Company of Oklahoma City was granted a territorial charter yesterday by Territorial Secretary Charles H. Filson.

Oklahoma City is to be connected with Tecumseh, Oklahoma, by this company Oklahoma City will be the western terminus. The line will be built from here south to Moore and Norman, going east from Norman passing through Denver to Tecumseh.

(38)

1,000 RETAILÉRS WILL GATHER HERE

PROMINENT SPEAK-ERS TO BE IN ATTEN-'DANCE—PROGRAM BEING PREPARED

A. L. Kirby, of Owl, I. T., president of the State Retail Association, was in the city yesterday arranging for the annual meeting of the association, which is to be held in this city beginning July 1 and lasting three days.

A program for the meeting is being prepared, including speeches from prominent men from different parts of the country. The first day will be devoted to a discussion of a blue book system for the elimination of "deadbeats."

(380)

April 9, 1907, p. 4

CAUSE OF BLOWUP REMAINS MYSTERY

GUTHRIE MAN INJURED BY EXPLOSION, WHICH WRECKS BUILDING

Guthrie, Okla., April 8.—The explosion that occurred here Sunday noon, wrecking a two-story brick building and critically wounding Roy Waugh, of Springfield, Mo., remains a mystery, as to its origin, and in all probability it will never be solved. The explosion shook the entire business portion of the city, rocking the walls of three-and four-story buildings as if



Stream-rock drill equipment used to build roads in eastern Oklahoma, ca. 1899. Holmes Collection, Western History Collections, University of Oklahoma.

an earthquake was in progress. Instantly from all buildings the people exited by hundreds, not knowing the cause and each expecting to find that some terrible accident had occurred.

C380

April 9, 1907, p. 6

5,000 MINERS IDLE

Butte, Mont., April 8.—Because 32 electrical workers, machinists, and blacksmiths employed in the Great Falls smelters of the Boston and Montana Company were denied a raise in pay, [they] walked out today. 5,000 men will be thrown out of work

in Butte tonight when the mine belonging to the company will be shut down.

C380

Wednesday, April 10, 1907, p. 2

FORTUNE WILL BE SPENT FOR PAVING

OKLAHOMA CITY'S STREETS TO BE GREATLY IMPROVED IN NEAR FUTURE

More than one-half million dollars in new paving has been contracted for and is under course of construction in Oklahoma City. For a distance of 10.66 miles, streets are being

graded and covered with asphalt, at a cost of \$698,000.

Oklahoma City has now, 15.41 miles of the best paved streets in the Southwest, which represents a total expenditure of \$1,056,319.00. The 10.66 miles contracted will make \$1,754,319.00, which the tax payers of this city are paying by special tax.

(380)

CUBANS WILL GET CONTROL JULY 4

Havana, April 9.—It appears tonight that July 4, 1908, will be the day when the control of Cuban affairs is given back to the Cuban people. The liberals are anxious that the final elections be held in December, 1907, and the government turned over May 20, 1908, the anniversary of the inauguration of the first Cuban republic.

(380)

Thursday, April 11, 1907, p. 12

THIRD PIPELINE BE-ING PROJECTED

STANDARD OIL COM-PANY BELIEVED TO BE BEHIND TULSA ENTER-PRISE

Tulsa, I. T., April 10.—It is rumored in oil circles that a third pipe line from Tulsa to the Gulf is being projected and that the Standard Oil Company is the fostering agency. What seems to bear this statement out is the statement the National Tube Company's mill at Lorain, Ohio, has 250 cars, or 100 miles of eight-inch pipe, ready for immediate shipment and is turning out eight-inch pipe at the rate of three miles daily.

(325)

EASTERN COMPANY BOOMS CLEVELAND

BIGGEST OIL REFINERY IN THE SOUTHWEST TO BE LO-CATED THERE

G. M. Reise, special agent for the Paova Oil Company of Pittsburgh, Pa., was in Oklahoma City yesterday making arrangements with the management of the Missouri, Kansas, and Texas Railway Company for the location of a side track about three miles in length at Cleveland, Okla. This step is one of the preliminaries to the erection at Cleveland of one of the larges oil refineries in the Southwest.

The company, which Mr. Reise represents, is said to control a large portion of the Cleveland oil fields at the present time, has decided to expend in the neighborhood of one-half million dollars in erecting a large refinery there, and putting pilelines to connect the oil fields with the plant. When the refinery is completed, it will be one of the largest in the country.

(3280)

April 12, 1907, p. 6

OSAGES LEAVE THE U.S.

CONTEMPLATE EXODUS TO MEXICO WHERE THEY MAY HAVE MANY WIVES

Tulsa, I. T., April 11.—It is rumored that the Osages, who are rapidly embracing the religion of the Latter Day Saints, or non-polygamist Mormons, are contemplating an exodus beyond the borders of the United States where they be the pristine Mormons. It has ever been with difficulty that the government has restrained the full blood bucks to one squaw, as the natural inclination of the full bloods is for a multiplicity of wives.

(380)

Saturday, April 13, 1907, p. 1

THAW JURY CANNOT REACH VERDICT IN FORTY-SEVEN HOURS

New York, April 12.— Hopelessly divided, seven for a verdict of guilty of murder in the first degree and five for acquittal on the ground of insanity, the jury that since January 23 last had been trying Harry K. Thaw reported today, after 47 hours and 8 minutes of deliberation, that it could not possibly agree on a verdict.

The twelve men were promptly discharged by Justice Fitzgerald, who declared that he too believed their task was hopeless. Thaw was remanded to the Tombs without bail to await a second trial on the charge of having murdered Stanford White.

(328)

April 13, 1907, p. 2

TULSA CITY MAY SWIPE REFINERY

Tulsa, I. T., April 12.—The refinery of the Uncle Sam Oil Company in west Tulsa may become the property of the city, ac-

cording to the terms of the bond given the Commercial Club by H. H. Tucker, Jr., in connection with its location. This bond specifies in the case the plant is not completed and in operation within a specified time, the site, valued at \$10,000, or its equivalent in money and all improvements, may revert to the city. Months ago the time limit expired and yet the plant is not completed.

(380)

April 13, 1907, p. 5

LIGHTING SYSTEM WILL BE EXTENDED

ALL NORTHERN POR-TION OF THE CITY TO BE EMBRACED

The Oklahoma Gas and Electric Company is planning extensions to its system of electric lighting that will embrace all of the northern portion of the city from Eighteenth Street to Putnam Park. Work on the extensions will be commenced within a short time. The main line will run north on Epworth Boulevard from the government observatory at Eighteenth Street to Putnam Park on Thirty-Fourth Street.

(380)

April 13, 1907, p. 7

CAR COMPANY TO EXPEND \$500,000

INTERURBAN BARNS WILL BE BUILT EXTENSIONS OF LINES PLANNED

Upward of one-half million dollars will be spent in bet-

terments by the Oklahoma Street Railway Company during the fiscal years commencing April 1, 1907, according to the statement made by John W. Shartel, general manager of the company. A considerable portion of this sum will be spent in the construction of the Interurban barns and offices in the block west of the post office, between Grand Avenue and Main Street.

(380)

April 13, 1907, p. 8

STATE FAIR NOW AN ASSURED FACT

WILL BE HELD ON EAST FOURTH STREET—SITE IS DECIDED UPON

The stockholders of the Oklahoma State Fair Association concluded yesterday afternoon that Oklahoma City should and would have a state fair. A meeting was held in the Chamber of Commerce rooms, and was by far the most lively [sic] session that body has ever held. After the financial part of the enterprise had been disposed of, the association settled the matter of a location by voting unanimously on the selection of the school quarter section on East Fourth Street [east of Martin Luther King Avenuel.

C380

Sunday, April 14, p. 1

FIRST CROP NOT IN-JURED BY FROST

PREDICTED THAT THERE WILL BE A BANNER YIELD THIS YEAR

"Oklahoma County fruit has suffered no damage whatever," said C. H. Kelley, a member of the Oklahoma County Fruit Growers Association, last night. "We have had a little frost last night and during other nights, but no harm was done."

"It is my opinion that Oklahoma will have the banner fruit crop of the United States. I have never seen conditions so favorable."

(3250)

April 14, 1907, p. 5

CARNEGIE GIVES AN-OTHER \$25,000

HANDSOME ADDITION TO PUBLIC LIBRARY WILL BE IN THE NEAR FUTURE

Andrew Carnegie, the donor of the public library at Third
and Robinson Street, has agreed
to double the amount of his gift.
At no additional expense to the
taxpayers of Oklahoma City, an
addition to the library will be
constructed, to cost \$25,000, and
the present structure will be remodeled and changed in several
particulars so that the new building will have more than double
the amount of floor space and
available room than at the present time.

(380)

April 14, 1907, p. 8

DESIGNER OF OKLA-HOMA'S SEAL WRITES ORIGIN AND ITS SIG-NIFICANCE

The Oklahoma Historical Society is compiling a full history of the seal of the new state. W. P. Campbell is engaged in gathering the data. He has written a letter to each person who has had anything to do with the seal from inception to its final adoption. Only one response has thus

far been received, President A. Grant Evans of Henry Kendall College in Muskogee.

(380)

April 14, 1907, p. 13

EXECUTION TREE FULL OF BULLETS

REMINDER OF THE DAYS WHEN SEMINOLES FOLLOWED ANCIENT CUSTOMS

Wewoka, I. T., April 13.— Standing in one corner of the store of the Wewoka Trading Company, at Wewoka, is a section of a white oak tree full of bullet holes, some enlarged and jagged where boys have dug bullets out. This is all that is left of the "execution tree" of the Seminole Nation.

(380)



Guthrie, Oklahoma, ca. 1908, Oklahoma Avenue. Forbes Collection, Western History Collections, University of Oklahoma.

April 14, 1907, p. 17

CAR LINE WILL BE FURTHER EXTENDED

WILL GIVE SERVICE TO NEW ADDITION ABOUT TO BE OPENED

Contracts have been signed with the Oklahoma Street Railway Company calling for an extension of their line from the present terminus in Englewood, north on Young Boulevard to Nineteenth Street, reaching almost to the center of a new addition and affording excellent car service for all parts of the tract.

(38)

Tuesday, April 16, 1907, p. 1

MEXICAN CITIES ARE DESTROYED

PEOPLE IN PANIC; 500 REPORTED KILLED

BY TERRIBLE EARTH-QUAKE SHOCK

City of Mexico, April 15.—The National Bank of Mexico has received a telegram saying that 500 lives were lost in the destruction Chilpancingo and Chilapa. In governmental circles the report is not credited. It is admitted that both cities were leveled to the ground, but it is not thought that the death list will approximate 500 owing to the fact that the houses are built of stone to resist earthquake shocks.

The governor of Guerrero has dispatched military engineers and troops to the stricken districts and the work of rescue and sanitation is being carried on in a systematic manner.

CONTINUED ON PAGE THREE

April 16, 1907, p. 3 — CONTIN-UED FROM PAGE ONE

MEXICO CITIES DE-STROYED BY AN EARTHQUAKE

Felt in California

Berkeley, Cal., April 15.—Perhaps the most remarkable shock of earthquake ever recorded at the Students Observatory at the University of California was registered on the seismograph at an early hour this morning. The shock lasted for more than half an hour and on that account it is believed that the local station is much nearer the center of the shock than the eastern stations, where the duration of the quake was much longer.

(380)

Wednesday, April 17, 1907, p. 2

HORROR OF QUAKE IN MEXICO GROWS

THIRTY EIGHT KNOWN DEAD

EXPECT CASUALTIES WILL BE AUGMENTED

Mexico City, April 16.— The latest reports from various points in southern Mexico give 38 as the number killed in the recent earthquake with 93 as the number injured. When complete reports are received, it is expected the casualties will be greatly augmented.

0380

April 17, 1907, p. 5

PRICE OF LUMBER MAKES ADVANCE

DEALERS ARE FAR BEHIND WITH ORDERS ON ALL BUILDING MATERIAL

"Within the past fifteen days there has been a general advance in the price of lumber from 50 cents to \$1 per thousand, and even at these prices, the wholesale dealers and mills do not want orders," yesterday declared T. H. Rogers a local lumber dealer who just returned, from attending a convention of lumbermen of the southwest at Houston, Texas.

(38)

April 17, 1907, p. 6

ANNIVERSARY OF QUAKE OBSERVED

CHARITY FETE LAST NIGHT OPENING FEATURE TOMORROW IS HOLIDAY

San Francisco, April 16.— The observance of the first anniversary of the earthquake and great fire that laid San Francisco in ruins on the 18th of last April, began tonight with a charity fete at the beautiful Hotel Fairmount on the summit of Nob Hill. Thursday the actual anniversary has been declared a municipal holiday by the board of supervisors.

(38)

April 17, 1907, p. 9

CHINA RULES IN MAN-CHURIA NOW

RUSSIAN CONSULS ARE AP-POINTED FOR LAST TOWNS TO BE TURNED OVER

St. Petersburg, April 16.— The expiration of the eighteen months' limit for the evacuation of Manchuria by the Russian and Japanese troops was marked by the nomination today of Russian consuls at Kirin and Tsitsihar, the last two towns in Manchuria to pass from Russian hands to the Chinése civil administration.

C350

Thursday, April 18, 1907, p.1

CATTLEMEN FACE **HUGE LOSSES**

FENCING ORDER CREATES **BIG FUROR**

Financial Ruin Stares at Many Cattlemen, with **Passing of Fences**

Guthrie, Okla., April 17.— A furor has been created among southern cattlemen by the recent announcement from Washington that Secretary Garfield of the Interior Department will not set aside the order practically prohibiting fencing of the public domain. The Texas cowmen are especially interested in the Oklahoma/Indian Territory situation, where they have secured the usual leases on large tracts of land in the Indian Nations.

The cattlemen told Governor Frantz of Oklahoma that they were willing and ready to pay rentals on the western Oklahoma lands, which were donated to the new state for colleges by the enabling act. Governor Frantz explained to Secretary Garfield that the lands leased to the cattlemen were the same as donated to the new state, but Secretary Garfield held these lands to be public domain until the filings were made thereon by the new state shall have been approved in Washington.

(380)

April 18, 1907, p. 7

ANNUAL LOSS IS FORTY MILLION

ANIMAL INDUSTRY AGENT TELLS OF DEADLY WORK OF **FEVER TICK**

The agricultural department estimates that the annual loss in the southern states on account of the decimation of, there is a great anxiety about the cattle herds due to Texas fever tick amounts to \$40,000,000. In Oklahoma, there is a loss of near \$50,000 every year from the same cause.

(380)

Friday, April 19, 1907, p. 5

BATTLESHIP KANSAS NOW IN COMMISSION

Philadelphia, April 18. — The battleship Kansas was placed into commission at the League Island Navy Yard today, with * appropriate ceremonies. The exercises took place on the quarter deck of the Kansas and were witnessed only by the officers of the battleship, members

of the crew, and attaches of the navy yard.

(380)

April 19, 1907, p. 7

THIRTY MEN FAIL TO CAP GAS WELL

GASSER'S GIGANTIC FLOW MAKES ROAR HEARD FOR SEVEN MILES

Tulsa, I. T., April 18.—The Noble gas well, seven miles north of Ochelata, in the Hogshooter District that a week ago exploded, blowing out its packing, has successfully resisted the efforts of 30 men to cap it for three days. Gradually the big well drills itself in until its capacity is now estimated at 50,000,000 cu ft. It is one of the largest gassers in America. The roar of escaping gas is heard for seven miles, and well catching on fire.

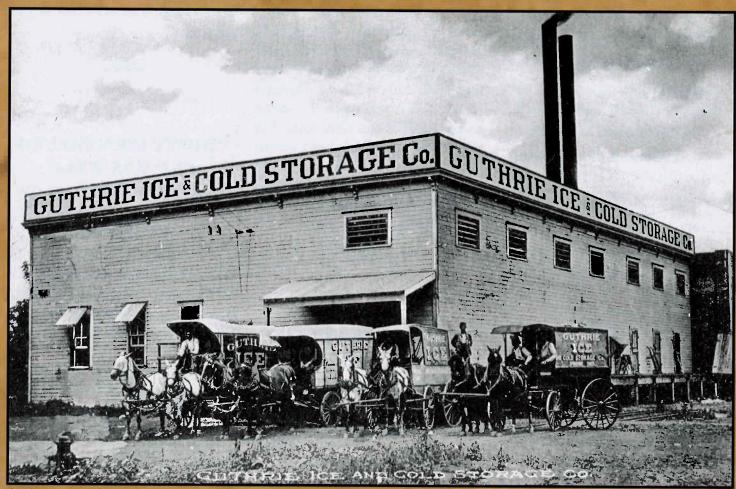
(380)

April 19, 1907, p. 11

BASS ARE STRIKING IN THE STREAMS

APPLE BLOSSOMS BEGIN TO FALL AND THAT IS A SIGN

Christie [Adair County], I. T., April 17.—Apple blossoms are falling in Indian Territory now, and when the apple blossoms fall, black bass will strike. From now until next November the man who loves to fish where fishing is good, where five bait is plentiful, and [where] fish are game, can find his heart's content in the mountain streams of



Guthrie Ice and Cold storage company, ca. 1904. Forbes Collection, Western History Collections, University of Oklahoma.

Indian Territory. The best ones are found in the eastern section, because the country is wilder and the streams fished less.

(380)

Saturday, April 20, 1907, p. 1

CONVENTION IS TO ADJOURN TODAY

Adoption of Election Ordinance Only Remaining Work

CONSTITUTION SIGNED

Republicans Decide to Withhold Names—To Print 75,000 Copies

Guthrie, Okla., April 19.—Altogether the delegates today signed seven copies of the constitution, including the engrossed parchment and six typewritten copies. This did not include the county boundary section, which will be signed by President Murray and Secretary Young only, following the completion of its transcribing. The parchment was shipped from New York yesterday. The convention adjourned at 5 o'clock this afternoon as it will be impossible to get the entire election ordinance from the printer in time to complete the work tonight and final adjournment will be taken tomorrow morning.

(SEC)

Sunday, April 21, 1907, p. 1

WILL TURN WATER INTO CITY MAINS

NONE OF THE WORK HAS BEEN ACCEPTED BY THE CITY

Water from the new waterworks will be turned into the city mains tomorrow and within ten days the water consumers of the city may expect to draw pure

water according to the statement made by City Engineer Burke yesterday afternoon.

The present delay is caused by the absence of a representative of Greer Filter Company, the firm having the contract for the construction of the filtration plant. None of the work has yet been accepted by the city until an authorized representative of the builders is here to superintend the work.

(38)

April 21, 1907, p. 6

HOLD WHEAT FOR A HIGHER PRICE

FARMER SAYS GREEN BUGS WILL CAUSE SCARCITY OF SEED

Farmers who have wheat should hold it, at all events, according to J. S. Davis, of Eddy, in Kay County.

The green bugs are operating against the wheat in that county as they have done farther south, and farmers there will have to buy seed if something does not stop the ravages of the bugs, according to Mr. Davis. The damage is much greater than the people realize, he says.

(380)

April 21, 1907, p. 16

SCHOOLS TO GET MONEY FOR LAND

Guthrie, Okla., April 20.—Governor Frantz is today in receipt of a communication from Secretary Garfield of the Interior Department in which he holds that the law prohibiting fencing of public domain is construed to be applicable only to the fencing up of public lands that are un-appropriated in any way and subject to homestead entry.

(380)

April 21, 1907, p. 26

Educational Institutions of Oklahoma STATE UNIVERSITY

[University of Oklahoma]

The growth of the State University of Oklahoma has been more rapid than that of Kansas University. We now have a faculty of nearly 40 instructors, eight buildings, and an enrollment that this year will be about 700. All this has taken place in but 14 years.

(380)

Tuesday, April 23, 1907, p. 1

GAS WELL FLOW 50,000,000 FEET

STRIKE NEAR SAPULPA

LAND SELLS FOR \$412.50 AN ACRE

Sapulpa, I. T., April 22.—
The largest gas well in Indian
Territory oil belt was brought
in late Saturday evening, three
miles southeast of this city, on
property owned by the Crow
Oil and Gas Company. The flow
is estimated at 50,000,000 cu ft a
day.

As a result of this strike, coupled with the one made near this location a few days ago, 160 acres of land was sold in the

chancellor's court in the city today for \$66,000 or \$414.50 an acre. This is the highest price ever paid for land in the belt.

(380)

Thursday, April 25, 1907, p. 1

GAS WELL DEFIES EF-FORTS OF MEN

IMPOSSIBLE TO CAP GREAT GEYSER—GREAT CROWDS ARE ATTRACTED

Tulsa, I. T., April 24.—After being out of control for a week following an explosion, the great Noble gas well in the Hogshooter District, seven miles north of Ocheleta, was capped only to blow out its packing a few minutes after. There is no telling now when this mighty gasser will yield to the will of man and stand hitched.

Daily the well is drilling itself in until its capacity now is estimated at 60,000,000 cu ft. This is sufficient to supply 25 of the largest towns on the Kansas City line of the Kansas Natural Gas Company, including Kansas City. Estimating its output as worth one cent per thousand, 6 thousand dollars [sic] worth of gas is daily going to waste.

CBEO



Cottonwood Creek flood of 1897 in Guthrie, Oklahoma. Holmes Collection, Western History Collections, University of Oklahoma.

April 25, 1907, p. 6

CHARTER GRANTED TO ELECTRIC LINE

EL RENO, OKLAHOMA CITY, AND SHAWNEE LINE INCORPORATED CAPITAL \$2,500,000

Territorial Secretary, Charles H. Filson, has granted a charter to the El Reno, Oklahoma City, and Shawnee Railroad, standard gauge, with headquarters at Oklahoma City, Chicago, and New York. The road is capitalized at \$2,500,000. The charter application shows that the purpose of the company is to construct

an electric line from El Reno via Oklahoma City to Shawnee, with a branch line to Norman!

(38)

Friday, April 26, 1907, p. 3

WILD EXCITEMENT OVER OIL FINDS

Okmulgee, April 25.— The oil well on the Arbuckle lease was finally capped late last night. Today the workmen have been busy with preparations for shooting the well, while others are preparing other drilling rigs. While it has not been officially brought in, it is said that the well is good for 1,000 to 1,500 barrels of oil daily.

Tonight Okmulgee is the scene of wild excitement. Speculators are here from all over the country. Unheard of prices are being offered for land, \$10,000 being offered for 40 acres by one buyer.

Not a bed can be found in town and the cots in the hotels are bringing high prices. The city is unable to shelter the visitors.

(380)

Saturday, April 27, 1907, p. 1

CHEAP GAS WILL BE A BIG BENEFIT

PIPELINE CONSTRUCTION PROGRESSES RAPIDLY TO BE COMPLETE SEPT. 1

Dirt is now being thrown at both ends of the line in the laying of the pipeline that is to bring natural gas from the midcontinent gas field to Oklahoma City, and Manager D. Hastings of the Oklahoma Natural Gas Company yesterday made the statement that the pipe line would be completed and in operation by September.

(380)

April 27, 1907, p. 6

TO BECOME RICH IN OIL COUNTRY

VALUE OF LAND IS SUDDEN-LY BOOSTED IN THE NEW FIELD

Okmulgee, I. T., April 26.—The well drilled in on the Arbuckle lease, nine miles southeast of Okmulgee in the Okmulgee field, is pronounced by those who are authority on oil to be the best well in the point of flow and grade now existing in the mid-continent field.

The well is located on the southeast of section 20, township 13, range 14, and the land surrounding the allotment upon which the well is located has been changing hands rapidly since yesterday morning. The highest price yet offered has been \$400 an acre.

Well No. 1 was drilled in at a depth of 1,616 ft, and up to the time of being capped in last night, was flowing eighty barrels an hour. The grade of oil is much the same as exists throughout the Glenn Pool and Muskogee field. Several tests have been made, but there was sufficient variance to warrant a change in the test of 39 and seven-tenths. For this grade of oil the price of the market would be \$1.25, yet no such prices are being paid.

C380

Sunday, April 28, 1907, p. 1

FLOODED MINE IS TOMB OF TWELVE

TWELVE MINERS IMPRIS-ONED UNDERGROUND WITH WATER FILLING THEIR CELL

Johnstown, Pa., April 27.—Twelve men, all foreigners, are imprisoned in the Foustwell Mine of the Berwind-White Coal Mining Company in Somerset County. Their fate is not known, nor will it be until a vast quantity of water has been pumped out, and this may require a couple of days. There is the wildest excitement among relatives and friends of the imprisoned men.

(38)

April 28, 1907, p. 14

MUCH NEW PAVING ON THE PROGRAM

ENGINEER BURKE SAYS THERE WILL BE 28 MILES BY JANUARY 1

That Oklahoma City will

have at least 28 miles of paved streets and the best sewer and water system in the Southwest by January 1, 1908, is the opinion of City Engineer Burke. Plans and specifications, including grades and estimated cost for grading, are being compiled for every street in the city.

(380)

Tuesday, April 30, 1907, p. 1

ENORMOUS PROP-ERTY LOSS IN BOT-TOMS ON BANKS OF SWOLLEN CREEK AND RIVER

Graphic Accounts of
Night of Horror Are Given
by Homeless Victims Of
the Flood Infested District

Reports received from Capitol Hill at an early hour this morning were the effect that both the Canadian River and Lightning Creek were rising. The residents of the bottoms are watching closely.

After the most thrilling experience in the history of the town, the residents of Capitol Hill awakened this morning praying for a cloudless sky and warm sun. Through the streets of the suburb veritable rivers have been flowing for more than 24 hours and if rain continues today, there will be enormous property damage.

Already financial loss has been great. Stock has been drowned, gardens have been destroyed, two houses wrecked, cellars flooded, wells ruined by the inflow of surface water, and now the great danger that threatens is the possibility of disease.

Lightning Creek is out of its banks; the Canadian River is swollen, and, in one place, is backed up along the Santa Fe tracks for a distance of almost a mile.

(380)

May—The Daily Oklahoman had a daily average circulation of 19,859 in May 1907. On May 1, C. F. Colcord announced his intention to build an eight story office and/or hotel on the southwest corner of Grand Avenue (now Robinson) and Harvey Street. On * April 30, the transport Buford left San Francisco with 4,000,000 lbs of flour for the famine sufferers in northeastern China. U.S. Congress approved a nearly one billion dollar budget. Work began on buildings at Bell Isle Park. Oklahoma-grown Elberta peaches were in great demand in nearby states. The construction of a drainage tunnel in the Cripple Creek, Colorado, gold-mining camp started on May 11. Randlett became Oklahoma's newest town on May 15. Tornadoes swept across Texas on May 25, killing 14 and injuring 84 people. Water meters went into service in Oklahoma City. The Houston ship channel was flooded during a heavy rainfall event. May 4, 15, and 27 had record low temperatures of 34°F, 32°F, and 38°F, respectively, which still stand today.

0380

Wednesday, May 1, 1907, p. 1 May 1, 1907, p. 1

MINERS SAVED BY HEROISM OF PALS

Two Volunteers Swim Passage and Effect Rescue

MEN MUCH EXHAUSTED

Johnstown, Pa., April 30.— After being entombed since last Friday noon in the Berwind-White Coal Company Mine No. 38 at Foustwell, near here, the seven miners who were shut off from the world by a sudden rush of water caused by the breaking of a wall of an abandoned mine, were rescued tonight. The men were greatly exhausted. Owing to their weakened condition, it was decided not to bring them out until after the mine had been drained. The men were reached at 10 o'clock by two men who made a dash through 50 ft of a water-filled heading,

(380)

May 1, 1907, p. 1

C.F. COLCORD, TO BUILD EIGHT STO-RY STRUCTURE ON GRAND AVENUE

"It is my intention to erect an eight-story office or hotel building on the property recently purchased by me, located adjoining the southwest corner of Grand Avenue [now Robinson] and Harvey Street," is the announcement of C. F. Colcord. "I may not build until next year," said Mr. Colcord.

(RE)

TRANSPORT BUFORD STARTS FOR STRICK-EN COUNTRY WITH GREAT CARGO

PRAYERS SPEED SHIP ON WAY

TWO HUNDRED THOUSAND DOLLARS ALSO IS FOR-WARDED FOR RELIEF WORK

Francisco. San April 30.—Carried into the stream by the army tug Slocum, with the Twenty Second Infantry band playing martial airs, the crowds on the dock cheering and waving farewell salutes, the government transport Buford sailed at l o'clock today from the Folsom Street Dock for Chinkiang with 4,000,000 lbs of American flour on board for the famine sufferers in northeastern China, contributed and collected through the efforts of the Christian Herald of New York.

(38)

May 1, 1907, p. 5

NEARLY REACHED BILLION DOLLARS

REPORT OF APPROPRIA-TIONS MADE BY LAST SES-SION OF CONGRESS COM-PLETED

Washington, April 30.— According to the volume on appropriations made, new offices created, etc., during the last session of Congress just completed by Thomas P. Cleaves, clerk of the Senate Committee on Appropriations, and James C. Courts, clerk of the House Com-



Well Fargo Express Office in Guthrie, Oklahoma. Holmes Collection, Western History Collections, University of Oklahoma.

mittee on Appropriations, the total appropriations for the session were \$920,798,143.

(380)

May 1, 1907, p. 7

CHANGE OF BILL AT THE DELMAR THE-ATRE

POPULAR PRICES AT MATINEE TODAY—DAVENPORTS
WILL REMAIN ANOTHER
WEEK

There will be a popular price matinee today and tomorrow night a new bill, the last one to be presented by The Matinee Girls Company. "Two Old Cro-

nies" will be offered.

With favorable weather "The Davenports" will give their free act on the green this afternoon and evening. They have also been persuaded to work as many days as possible this week, and to remain here until a week from next Sunday.

Last night a fair sized audience appreciated "The Man from Nowhere" in the theater. Next week will be the opening of vaudeville that will run for two weeks. Some special attractions have been booked.

C380

May 1, 1907, p. 10

An advertisement for May Music Festival to be held at Convention Hall to benefit Public Libraries appeared on page 10. Season tickets for four concerts ranged from \$1.00-\$2.00 and single concert tickets were 50¢-\$1.00. Attractions included Chicago Symphony Orchestra—50 pieces, six great vocal artists, six celebrated instrumental soloists, grand mixed chorus—Apollo Glub, and children's chorus.

0380

Thursday, May 2, 1907, p. 1 May 2, 1907, p. 5

SEVEN KILLED IN MINE DISASTER

SBODIES OF 3 MINERS ARE RECOVERED-FOUR OTH-**ERS BURIED ALIVE**

Charleston, W. Va., May l-Three men were killed, four were severely burned, and four others entombed and are probably dead as a result of [the] mine disaster at the Whipple mines in the Leap Creek District this afternoon.

(38)

May 2, 1907, p. 3

"SPOTLESS TOWN"TO **BE DEMANDED**

POLICE CHIEF POST WILL **JOIN MAYOR ON CLEAN-UP** DAY

One week from today Oklahoma City is to be cleaned thoroughly by her citizens. All rubbish, all dirt, all refuse must go and Oklahoma City is to be a veritable "spotless town," after May 9. Streets are to be swept, allevs cleaned, sidewalks scrubbed, and a merry war will be waged against the microbe.

(380)

BELLE ISLE PARK DAM NOT STRONG

WATER HAS BEEN ALLOWED TO ESCAPE—IMPROVE-MENT WORK PROGRESSING

Lumber and other building materials are being assembled at Bell Isle Park for the construction of the summer pavilion and other structures that are to adorn the new amusement and pleasure resort, and work on the construction of these buildings will be commenced early next week.

The great dam that has been constructed across Deep Fork Valley for the creation of an artificial lake received a test from the recent heavy rainfall, when about 25 acres of the vallev were inundated. It was decided that the dam in its present condition would not stand the pressure, being simply a loose dirt fill, and a great part of the flood water has been allowed to escape. There will be further attempts this season to create the great pool that is planned, but next spring the dam will be properly fortified and this plan executed.

(380)

May 2, 1907, p. 9

TREASURE POT IS **FOUND ON A FARM**

DUG OUT OF GROUND ON SITE OF STAGE COACH LINE

Eufaula, I. T., May 1.—D. W. Hare of Los Angeles, Cal., owns a farm south of this place.

During the past week this farm has been overrun with treasure seekers and it is evident that they have discovered some buried treasure, but the amount is not known.

Five holes were dug on this place. In one of them a metal pot was found and broken open. What it contained is not known. Parts of the broken pot are in the First National Bank at Eufaula.

Before the place was bought by Mr. Hare, it was owned by Charley Nero. There was once a store and Indian trading post owned by Nero's father. This was in the early days, a station for the old Butterfield Stage line.

(380)

Friday, May 3, 1907, p. 3

OKLAHOMA PEACH **CROP IS IN GREAT** DEMAND

DEALERS ARE ASKING **GROWERS TO NAME PRICES** IN ADVANCE

Guthrie, Okla., May 2.— The peach crop of Oklahoma will sell for a bigger price this year than ever before. In fact many of the growers maintain that \$2.00 a bushel will be a ruling price for them in the northern markets.

Oklahoma is extremely lucky this season. Throughout the northern states, as a rule, the April cold weather ruined whatever prospects there were for a crop, while in Oklahoma the cold weather came too late to injure the peach crop, and the present season will see the biggest crop of Elbertas ever harvested in the Territory.

(3E)

May 3, 1907, p. 6

FIRE CHIEF KESLER AGAINST GASOLINE

POINTS TO BATAL BURNING AS LESSON TO THE PEOPLE

Oklahoma City is threatened by a firebug, declared to be more dangerous than the small boys who developed a mania for barn fires last summer. This one works, not in barns and butbuildings, but in residences and business blocks, where a fire means the loss of many thousands of dollars.

Carelessness in using gasoline has been the cause of an astonishing number of conflagrations in Oklahoma City during the past year, according to Chief Kesler of the Fire Department. "It must be stopped. Some day a misplaced can of gasoline or careless or ignorant use of gasoline will start a fire that will put Oklahoma City in ashes," said Chief Kesler.

(380)

Sunday, May 5, 1907, p. 1

MAY PROSECUTE 20 COAL BARONS

INDIAN TERRITORY OPERA-TORS SAID TO BE IN DAN-GER OF INDICTMENT

South McAlester, I. T., May 4.—More than 20 prominent coal

operators in Indian Territory, who, it is said, control the output and price of coal in the territory, are, it is said, to be indicted soon by the federal grand jury of the southern district for alleged violation of the anti-trust law. The investigations began early this year by Interstate Commerce Commissioner Prouty. Hearings were held at South McAlester and other territory points.

(380)

May 5, 1907, p. 5

BELLE ISLE PARK ON LARGE SCALE

ASSERTED IT WILL BE READY FOR USE NEXT YEAR

"Belle Isle Park will be, when completed for use next year, the largest and finest recreation ground west of the Mississippi River and east of the Pacific Coast," said John W. Shartel, general manager of the Oklahoma City Railway Company in discussing the improvements now under way at the Park.

Showing a map of the park he said: "The park embraces 200 acres. This year we will have a lake of 45 acres in area. which will be increased to 140 acres next year. There will be 30 islands in this body of water and twelve to fourteen miles of channels. The focal point of the park will be the casino, a fine structure having a floor space of 120 by 180 ft, located about 600 ft southwest of the Interurban or park station. From the station to the casino or pavilion, we have planned an esplanade that will

be one of the scenic features of the park. It will be a marvel of the landscape gardener's art."

(380)

May 5, 1907, p. 6

TRYING TO AVERT SHORTAGE IN COAL

RAILROADS URGING DEAL-ERS TO GET IN WINTER SUP-PLY EARLY

The traffic and operating departments of the Harriman and the Hill Lines have united in an effort to prevent a recurrence of a coal famine next winter in the West and Northwest.

Orders have been issued by the highest officials of the various roads and have the sanction of E. Harriman and James J. Hill, requiring all of the officials to make every effort to induce the coal dealers to lay in their winter's supply in the summer months. The officials of the railroads dread another such coal famine as occurred last winter, when they were blamed for the suffering and destitution which reigned in the West and Northwest many weeks.

(38)

May 5, 1907, p. 10

PUTNAM PARK
THEATRE OPENING
WEDNESDAY, MAY 15TH
THE BIG MUSICAL COMEDY
SUCCESS

"The Isle of Champagne"

Original Costumes, Scenery, and Electrical Effects

30---People In The Cast---30

ORCHESTRA TEN PIECES

All Seats 25¢. Children 10¢

No Intoxicating Liquors in Any Form Sold in Putnam

Park

(38)

Tuesday, May 7, p. 8

Santa Fe offers daily excursions to California for \$50.00 from Apfil 25 to May 18. Contact F. J. Best agent, passenger station or Tom Boylan, city passenger agent, No. 6 N. Broadway, Oklahoma City.

(380)

Friday, May 10, p. 7

INJUNCTION TIES UP OIL PROPERTY

ZEKA MOORE BRINGS ACTION IN THE GLENN POOL LITIGATION

Tulsa, I. T., May 9.—The biggest sensation yet has developed in the controversy over the

famous Zeka Moore lease in the Glenn Pool to which are about a dozen claimants in one way or another. Zeka Moore, now an inmate of the Kansas Penitentiary, brought the latest action that resulted in Judge Suizbacher appointing T. E. Smiley and D. C. Connelley of Tulsa receivers to take charge of the property, and declaring a permanent injunction against all parties in the matter, restraining them from further proceedings.

Zeka Moore, in his petition, claims he was not of age when he made all deeds and leases for which he is doing time in prison. The Zeka Moore lease is one of the most valuable pieces of oil property in the Glenn Pool, with a daily produc-



First 515-ft-long bridge built across the Cimarron River at Pleasant Valley crossing, completed in 1907. Holmes Collection, Western History Collections, University of Oklahoma.

Wednesday, May 15, 1907, p. 1

tion of 10,000 barrels valued at \$500,000. All wells will not be shut in and there will be no more development until all litigation is ended and a permanent settlement of the complicated dispute is reached.

(380)

Saturday, May 11, 1907, p. 8

CLOSE BIG PLANT 1200 IN IDLENESS

STRIKERS DEMANDS MET BY SHUT DOWN OF SALT LAKE SMELTER

Salt Lake City, May 10.—The plant of the American Smelting and Refining Company at Murray, a suburb, employing between 1,000 and 1,200 men, with a monthly payroll of \$75,000 closed down indefinitely this evening and the last one of the "live" furnaces of the eight operated at this plant was allowed to cool.

This action of the company follows efforts made for several days to reach a compromise with about 900 Greeks and Austrians, furnace chargers and ore haulers, who walked out because the company would not grant a flat increase of 25 cents per day.

(380)

Sunday May 12, 1907, p. 11

CRIPPLE CREEK BIG BORE BEGUN

GIGANTIC UNDERTAKING WILL DRAIN ALL OF FA-MOUS GOLD MINING DIS-TRICT

Cripple Creek, Colo., May 11.—The building of the great Cripple Creek drainage tunnel, inaugurated today by the governor of the state and distinguished visitors, marks an epoch in the history of the famous gold camp.

When the high-grade ore bodies in the known veins in this camp had been extracted down to the 500-ft point, the water troubles of the district began. A drainage tunnel was therefore conceived and eventually driven to cut the main water courses of the district at a depth of 600 ft, but the tunnel was not deep enough. After months of investigation it was determined to drive a deep drainage tunnel that would drain the camp a great depth. The cost of such an undertaking is enormous, approximating \$1,000,000.

The portal of the tunnel is located on the stream known as Cripple Creek and is situated at an elevation of 8,020 ft above sea level. It will drain the entire Cripple Creek District at a depth of about 1,330 ft from the surface, or 730 ft below the present water level.

(380)

BIG EIGHT STORY OF-FICE BUILDING TO BE ERECTED AT COST OF \$300,000

SITE BOUGHT AND BOND GIVEN

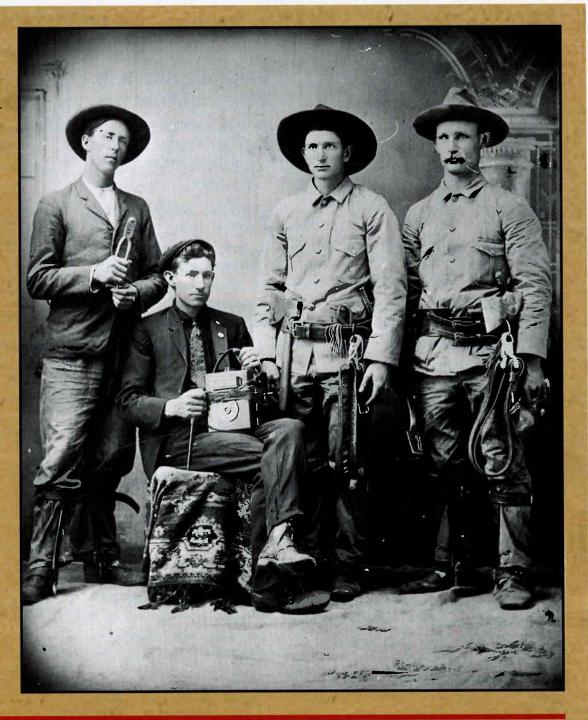
One hundred and two thousand and five hundred dollars was the consideration that figured in the biggest realty transaction ever consummated in Oklahoma City, that amount being paid by Robert Galbreath of Tulsa and Col. C. F. Colcord to Henry Overholser for six lots fronting on Grand Avenue and ranging westward from Robinson Avenue.

The contract of sale binds the purchasers to forfeit the sum of \$20,000 in case the purchasers do not, before the expiration of a year, begin the construction of an eight-story steel and concrete office building to cover the entire tract of 150 by 140 ft. The transfer was made yesterday.

The tract is at the present time occupied by six two-story frame buildings which, when constructed in the early days of Oklahoma City, were the pride of the community, but that have become an eye-sore of recent years, representing only a row of shacks in the heart of the business district.

(380)

The first Crescent, Oklahoma, telephone repairmen, early 1900s. Holmes Collection, Western History Collections, University of Oklahoma.



Thursday, May 16, 1907, p. 1

BUILD NEW TOWN BE-TWEEÑ 2 DAYS

RANDLETT RUSHES INTO EXISTENCE -RAILROAD EX-TENSION PROJECTED

Lawton, Okla., May 15.— At the close of the third day of the government sale of lots on the town site of Randlett in the Kiowa, Comanche, and Apache Indian pasture reservation, 400 lots have been disposed of and the Indian tribes are \$35,000 richer. This record of both number and price is said to be unequalled in the history of the disposition of government town sites at public auction. Five hundred men are working tonight

on the erection of the buildings and the clank of the hammer will be heard without interruption till dawn, when a new force will go on for another day.

(380)

Friday, May 17, 1907, p. 8

COURT HOUSE BURNED

Ardmore, I. T., May 16.— Fire at 4 o'clock this morning destroyed the federal court building at Tishomingo. The greater number of the court records were safe in the vault. The commissioner lost many valuable papers. The loss is estimated at \$10,000.

(380)

Sunday, May 19, 1907, p. 3

TO ISSUE GRAZING LEASES ON MILLION ACRES OF LAND

Guthrie, Okla., May 18.— Applications to lease the lands included in the sections made for the endowment of the colleges of the new state of Oklahoma, will be received by the Oklahoma Territorial School Land Leasing Board on June 16, for grazing leases running from April 1, 1907 to April 1, 1908.

(380)

May 19, 1907, p. 15

BIG OIL COMPANY GRANTED CHARTER

OKLAHOMA CITY MEN ARE INTERESTED IN INDIAN TERRITORY LANDS

The Indian Territory Oil Company of Oklahoma City has been granted a charter in the office of the territorial secretary at Guthrie. The company's capital stock is given as \$100,000.

The incorporators are R. S. Rowland, W. B. Skirvin, and W. B. Sturgis of Oklahoma City, C. N. Gould and J. E. Miller of Norman, and Boone Williamson of Lehigh, I. T.

"The Company owns a considerable amount of valuable oil property, located in all parts of the Indian Territory oil field," said R. S. Rowland last night. "Our purpose is to develop the properties in a short time. Mr. Skirvin and myself [sic] went through the Texas oil discoveries and have a great deal of experience along that line. The Indian Territory fields look good to us."

(38)

Tuesday, May 21, 1907, p. 1

TERRIBLE MINE HOLOCAUST FLAMES WIPE OUT 20 LIVES

Trinidad, Colo., May 20— Twenty miners including Superintendent Alex Jackson, were burned or suffocated to death last night in the Engleville Mine at Engleville, Colo. The bodies were recovered during the day. The men went to work last night and as they did not come out this morning an investigation was started. It was discovered that fire which broke out in the mine a year ago and was till burning in some sections had suddenly spread across the incline tunnel cutting off the men and preventing them from reaching the outside. The Engleville Mine is one of the oldest coal producers in

Colorado, having been operated fully 30 years.

(38)

May 21, 1907, p. 12

25 MILES OF NEW STREET CAR LINE

RENO AVENUE BRANCH TO DELMAR WILL SOON BE COMPLETED

Cars will be operating on the Reno Avenue Line to Delmar Garden within three weeks. The line would have been in operation before this but for the delay in shipment of the crossings to be used at the junctures with the Frisco tracks.

(380)

Wednesday, May 22, 1907, p.

80-ACRE TRACT TO BE PLATTED SOON

STREETS WILL BE LAID OFF AND OTHER-MINOR IM-PROVEMENTS MADE

Another deal that will figure as a marker in a year characterized by heavy transactions in Oklahoma City realty was closed last night, when the Colcord Investment Company, at the head of a syndicate of local realty dealers, purchased an 80 acre tract of the Blakeny addition north of the city for \$50,000.

The tract secured by this syndicate is known as the Bruce Dairy Farm and lies west of Walker Street and north of Thirtieth Street and immediately north of Fairlawn Cemetery.

Frank P. Johnson, president of the American National Bank, who is a member of the syndicate, stated last night that the tract would be platted and placed on the market in town lots immediately. Streets will be laid off throughout the tract and other minor improvements made immediately.

(380)

Thursday, May 23, 1907, p. 1

\$100,000 COST OF SPLENDID HOMES

Fashionable Part of City Is Being Rapidly Built Up

That improvements in the residence districts of Oklahoma City are keeping pace with the remarkable development in the business district is evident from the numerous handsome residences that have recently been constructed, are now under construction or contemplated, in the fashionable north end. Plans have been prepared and are in contemplation at this time that mean the erection in the immediate future of a number of first class residences on Sixteenth Street, between Robinson and Shartel Avenues that will represent an aggregate cost of more than \$100,000.

Frank Johnson has recently purchased 100 ft of frontage on the northeast corner of Sixteenth and Walker Streets and will, at once, begin construction of a cut-stone residence of Doric design, to cost \$20,000. On the lot adjoining on the east, D. E. McKinstry will erect a residence

to cost about \$20,000, while a home of similar cost is to be created by C. B. Bogan on the next lot east, adjoining the Overholser property.

(380)

Friday, May 24, 1907, p. 1

COMMENCEMENT WELL
ATTENDED

48 STUDENTS GRADU-ATED

Seats Filled at White Temple and Standing Room Is Scarce

Before what was declared to be the largest crowd ever assembled to witness a commencement exercise in Oklahoma, the class of '07 of Oklahoma 'City High School were presented with diplomas and made its last bow before an admiring public. The exercises were held last night in the White Temple.

(380)

May 24, 1907, p. 1

WAR IS DECLARED ON COFFIN NAILS

Oklahoma smokers will be denied the pleasure of an after dinner cigarette if the plans of the Oklahoma Anti-Cigarette League carry. J. B. Lister, state organizer, has arrived in this city to form an anti-smoking brigade.

They plan to work for a law making the carrying or smoking of a cigarette a misdemeanor and finable in any sum over \$50. Lister has organized the school children against ciga-

to cost about \$20,000, while a rettes in several cities in this terhome of similar cost is to be cre-ritory.

(380)

Sunday, May 26, 1907, p. 1

DEADLY TORNADOES SWEEP TEXAS

FOURTEEN KILLED AND 84 INJURED

DEATH RIDES ON WINGS OF FURIOUS LONE STAR STATE STORMS

TO FIVE VILLAGES—EMO-RY, WILLS POINT, GIBBLE SPRINGS, ROSEBUD, AND PARK SPRINGS

Emory, Texas, May 25.— Late this afternoon a tornado bore down on Emory, sweeping the outskirts and killing six persons. It approached from the southwest and appeared to be headed directly for town, but suddenly veered and circled the town.

(326)

Tuesday, May 28, 1907, p. 5

FLOODS CAUSE OF AC-CRUING CLAIMS

CITY ASKED TO REIMBURSE PROPERTY OWNERS WHO SAY THEY HAVE LOST

The city has three claims for damages on its hands because of storm water. All three were presented last night and were referred to the committee on claims.

C350

May 28, 1907, p. 5

WATER METERS TO GO INTO SERVICE

CITY COUNCIL DOES AWAY
WITH THE FLAT RATE SYSTEM HERE

All water consumers in Oklahoma City are to be put on a meter system. By a resolution adopted by the city council last night, the city clerk was instructed to advertise for bids for 3,000 meters to be installed as rapidly as possible after they arrive. At the present time, practically all the water users of the city are on a flat rate. [In the summer, the city used more than 4 million gals of water per day.]

(38)

May 28, 1907, p. 7

NO FREE ICE FOR SWELTERING FOLK

PETITION OF W. C. T. U.
TURNED DOWN BY THE CITY
COUNCIL

If the members of the W. C. T. U. place ice-water barrels along the streets of Oklahoma City this summer, as they have done for the last two years, they will do it without aid or comfort of the city council. The petition asking the council to appropriate \$200 for this purpose was turned down by that body last night.

(380)

Thursday, Memorial Day, May May 31, 1907, p. 1 30, 1907

TRADE HALTS TO HONOR DEAD

Memorial Day Will Be Observed by Businessmen

Oklahoma City will today pay tribute to the nation's dead. The wheels of commerce will halt while prayers are said and songs are sung and while old stories of the wars are being hauled forth from memory's vaults.

(380)

Friday, May 31, 1907, p. 1

SCORES HOMELESS AWFUL FLOODS IN TEXAS

Houston, Texas, May 30.— The rainfall in Houston for the 24 hours ended at 7 o'clock tonight has been four and a quarter inches to which can be added an inch during Wednesday. This has flooded the Houston ship channel, the rise being about 30 ft, making the highest record since 1879. The stream is still rising. All shipping and wholesale interests in Houston along the stream are underwater.

(380)

40,000 ARE IDLE IN SAN FRANCISCO

LABOR COMMISSIONER
GIVES STARTLING FIGURES
ON INDUSTRIAL TROUBLE

San Francisco, May 30.— According to figures based on an investigation conducted by Labor Commissioner W. W. Stafford, there are approximately 40,000 persons idle in San Francisco as the direct result of the existing labor troubles.

(328)

—Staff Kudos and Profiles

OGS Looks for New Leadership

By Jessica Jackson/The OU Daily

One day in 1949, a young Charles Mankin wandered into the oldest building on the University of Texas campus — the geology building — and began to look at the displays.

A professor walked up to him and asked, "What are you doing here?" Mankin, at the time considering a major in engineering, explained he was thinking about taking a geology course the following semester.

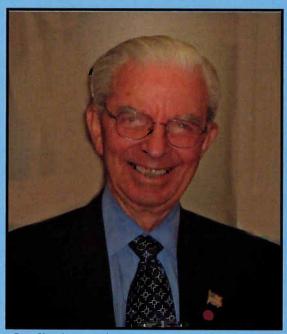
The professor sat Mankin down for a 30-minute lecture on geology. That short lecture changed his life.

Currently Oklahoma Geological Survey director, Mankin, after 48 years of service, will retire Oct. 31 [2007].

"I've gotten to thinking that I've been around a long time, and there are some things I'd like to do that I haven't been able to do because of the job," Mankin said. "And I'm not getting any younger."

Randy Keller, professor of geophysics, will take over for him as interim director until a permanent replacement is found.

"He's a real icon in Oklahoma in the geological community," Keller said. "It's a big pair of shoes to step into."



Dr. Charles Mankin, Director Oklahoma Geological Survey 1967-2007

MEET THE DIRECTOR

Not only has Mankin been with the survey for nearly half a decade, he has been the director for 40 years.

"We're going to miss him," said Connie Smith, information specialist. "A lot of us have sort of grown up here [with him]."

Mankin graduated from the University of Texas with a bachelor's in geology in 1954, she said.

After graduate school at UT and a post-doctorate at the California Institute of Technology, he came to OU in 1959 to work for the OGS as a geologist and a professor at the college. He was appointed

director in 1967.

Although he attended UT, Mankin was tied to Oklahoma. He said his great-grandmother, a Cherokee, came to Oklahoma along the Trail of Tears, and she was the only one in his family to survive the move.

As director, he has been in charge of petitioning Congress to pass legislation, Smith said.

He was instrumental in passing a program through Congress to get federal money to accomplish geologic mapping in all 50 states, said Neil Suneson, assistant director of geological programs.

Suneson said he felt it was a huge success for states, and it is still an active program.

He also considers his work for the public and Oklahomans as another large part of his job.

"He's very service-oriented," Smith said. "He is adamant that our role is public service."

Smith said he acted the same toward large groups as he did toward individuals, coming to the survey just to find out what kind of rock they were holding.

Growing up on a ranch in Texas, Mankin said anything that kept him outside was perfect for him.

"It didn't feel right if I was cooped up in a house too long," he said.

The survey still goes out and maps by foot, Smith said.

Smith said Mankin has a vast knowledge of all aspects of geology.

"His knowledge will be a great loss," she said. "His scope of understanding is very broad."

THE OKLAHOMA GEOLOGICAL SURVEY

The survey has been around since before Oklahoma was a state, Smith said. It originally was a territorial survey until 1907.

According to the mission statement found on the survey's Web site, "The survey is chartered in the Oklahoma Constitution and is charged with investigating the state's land, water, mineral and energy resources and disseminating the results of those investigations to promote the wise use of Oklahoma's natural resources consistent with sound environmental practices."

Since the beginning of the survey, it has been housed on OU's campus.

"We are in an academic environment, so we are involved in academics and students, but we are also very much geared toward public service," Smith said.

In 2006, the survey officially became part of OU when it combined with the College of Geology and Geophysics to form the new College of Earth and Energy.

Suneson said Mankin has been a significant part of the survey for half of its existence and he is quite optimistic about the Survey's future: "I think the future for us and the new college is very, very bright," he said.

Suneson thinks people will probably continue to go to Mankin for questions because of his expertise in the field.

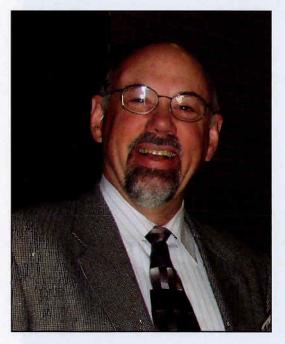
Mankin said he doesn't have any long-term regrets about his time focusing on geology.

"I've thoroughly enjoyed the time I've been here," he said. "I've enjoyed all of the things that I've been asked to do. I think I'm extraordinarily lucky to have had the career I've had."

Keller Named OGS Interim Director

Dr. G. Randy Keller, Professor and Edward Lamb McCollough Chair in Geology and Geophysics with OU's ConocoPhillips School of Geology and Geophysics, has been named Interim Director of the Oklahoma Geological Survey. Keller replaces Dr. Charles J. Mankin, who retired on October 31,

2007.



Keller's area of expertise is in geophysics, lithospheric structure, and tectonics. His research and teaching interests stress geophysical applications that span a variety of techniques and a variety of scales.

He and his students have conducted many studies of the structure and evolution of basins and deeper features in the lithosphere around the world using seismic, gravity, and magnetic measurements integrated with geological data. He has also regularly used geophysical methods to study issues such as ground water resources, earthquake hazards, and characterization of sites for sensitive facilities. He has been very involved in the Geoinformatics initiative and is interested in the development of geophysical databases, techniques that foster data integration, software tools, and web services.

In addition, he has helped organize numerous large international cooperative research efforts and has regularly received funding from sources that include the National Science Foundation, NASA, U.S. Department of Energy, U. S. Geological Survey, U.S. Department of Defense, and industry. Keller has published almost 250 scientific papers and book chapters as well as many maps and reports. He also has directed 22 doctoral dissertations and 63 master's theses and has mentored and advised many undergraduate students. He has served numerous governmental agencies, professional societies and scientific bodies as an officer and committee member. He has received several awards including the George P. Woollard Award of the Geological Society of America and the Grover E. Murray Distinguished Educator Award of the American Association of Petroleum Geologists (AAPG).

Mankin Chosen for Hall of Fame

Charles J. Mankin, former director of the Oklahoma Geological Survey and University of Oklahoma Regents' Professor, was among 10 people inducted into

the Oklahoma Higher Education Hall of Fame in October 2007.

The following information on Mankin was included in the awards presentation program:

B.S., Geology, University of Texas, Austin, 1954

M.A., Geology, University of Texas, Austin, 1955

Ph.D., Geology, University of Texas, Austin, 1958

Post-Doctoral Fellow, California Institute of Technology, 1958-1959.

Oklahoma has indeed been fortunate in obtaining the scientific expertise of Charles J. Mankin, whose knowledge of geology has enriched the state and the nation. Earning a Ph.D. in geology from the University of Texas in 1958, he commenced a teach-

ing/research career at the University of Oklahoma in 1959, a career that continues to this day, now holding the position of Regents' Professor. In 1963 he be-

came the Director of the School of Geology and Geophysics (until 1977) and in 1967 the Director of the Oklahoma Geological Survey and in 1978 (until 1987)



Dr. and Mrs. Charles J. Mankin at the awards banquet.

served as Executive Director of the Energy Resources Institute at the University of Oklahoma and later as Director of the Sarkeys Energy Center. He has been called upon by national leaders numerous times to serve on national committees investigating energy problems, conservation techniques, and land manage-

ment procedures. A measure of his stature is the number of national organizations to which he has been elected Vice-President and President: Association of American State Geologists; the American Geological Institute; the Mid-Continent Section of the Society of Economic Paleontologists and Mineralogists; and the American Institute of Professional Geologists. The Oklahoma Higher Education Hall of Fame is honored to welcome Charles J. Mankin as a member.

Through the Oklahoma Higher Education Hall of Fame, the Oklahoma Higher Education Heritage Society recognizes outstanding men and women who have excelled in higher education and who have encouraged others to contribute to the economic development and quality of life in Oklahoma.

Dr. Charles J. Mankin

One of the Constants in the Universe!

Raymon Brown Oklahoma Geological Survey

Scientists use a number of constants that they associate with important physical phenomena. For example, they use Newton's universal gravitational constant in the study of gravity and Planck's constant in the study of quantum mechanics. The constant, pi (π) , is not restricted to the scientific community; it is used in calculating the circumference of a circle in terms of its radius. If physical constants were capable of changing, life would become rather unpredictable — and unpleasant. Surprisingly these constants did not always have their present values. As the universe evolved, the laws of nature are believed also to have evolved to a point at which we comprehend them today. For purpose of this article, I assume that universal constants remain as such during our lifetimes.

This article is about a man who is one of the constants for the State of Oklahoma via his positions at the University of Oklahoma (OU). He has chaired the School of Geology and Geophysics; has been the Director of the Energy Resources Institute and the Interim Director of Sarkeys Energy Center; and retired as Director of the Oklahoma Geological Survey (OGS). These titles, however, do not begin to tell the entire story of Dr. Charles J. Mankin.

Many astronauts have slow, steady heart beats even as they step onto the moon surface or go into orbit around the planet. Not everyone is constructed similarly, so these astronauts have a special characteristic. Dr. Mankin remains steady in his convictions, just like the heart-beat of the astronaut. Like the universal constants in science, Dr. Mankin has always remained on course to do the right thing, even in times of stress.

Dr. Mankin is a capable scientist as well. He studied clay mineralogy in graduate school and conducted clay minerals research as a professor; he is quite comfortable in any academic discussion. Many academics might wonder why a scientist would follow an administrative career as Dr. Mankin has; they might even consider it a waste of a good mind. His leadership role, however, has been a gift to Oklahoma throughout his incredible career of caring for the State's natural resources at the OGS and for the students of OU. Any technical contribution looks small by comparison. Dr. Mankin chose the path that did the most good for his adopted state and for the people of Oklahoma.

It is tempting to try to capture the essence of Dr. Mankin by listing all of his awards and accomplishments. He was honored with the title of Regents' Professor at the March 2006 meeting of the University of the Oklahoma Board of Regents. OU President David L. Boren said, "His scholarship, teaching, and research have left a lasting mark on our state, and its economy and energy industry." This award is simply the tip of the iceberg, and any reader or biographer could quickly get lost in the forest of Dr. Mankin's achievements and awards.

The idea for this article came from a recent meeting of university and industry researchers on the OU campus, during which it was my pleasure to meet Dr. Iraj Ershahi, a professor at the University of Southern California. When told that I worked at the OGS, he asked if I knew Charles Mankin. When I said, "Yes, he is my boss," Dr. Ershahi proceeded to give me his opinion of Dr. Mankin. Dr. Ershahi's statements included many superlatives: "Dr. Mankin is a first class citizen." "Dr. Mankin is a first class educator." "Dr. Mankin puts the interest of the country first," and "Dr. Mankin always considers the interests of the students." Dr. Ershahi expanded upon the compliments of OU President Boren to include Dr. Mankin's apparent love of country. Dr. Ershahi had observed the same Dr. Mankin that many others had as well. Dr. Mankin learned certain basic morals and principles early in life and then simply applied them throughout his personal and professional life. What made Dr. Mankin one of the constants in the universe? The clues start with his childhood in Ozona, Texas.

The Path from Ozona to Dallas

Charles Mankin's maternal grandparents were German. His mother was Myla Boehmert, whose her parents migrated from Germany to Kankakee, Illinois where they met and married. Honest and hard working, they migrated to Dallas, Texas where his grandfather began work as a stock boy for the Arthur A. Everet's Jewelry Store, working his way up the hard way. He retired as a floor walker after 50 years.

There is a hint of rumor that Charles' paternal grandfather emerged on the wrong side of the law. He lived in Coleman, Texas, during the days of the cowboy (some argue that it remains so). The Younger brothers were known outlaws at the time, spending an occasional night in the barn of John Mankins. (Yes, the spelling of Mankins is a little different from the "Mankin" of today.) Some viewed the Younger brothers as Robin Hoods, stealing from the rich to give to the poor, and perhaps it was true. John Mankins soon had a son, Charles' father, who was named Coleman Young Mankin. Hmmm! Is there something suspicious in that name? John Mankins' son was born in Coleman and was named after the

Texas town and the Younger brothers.

Life in Coleman was not exactly what Coleman Manken wanted, especially since he did not get along with his father. So as a young man, Coleman Young and a friend named Buck McCain decided to take on the world. They were approximately 14 or 15 years old when they left Coleman with a couple of saddle horses and a packhorse. They looked for work and wound up in Ozona, Texas.

When they arrived in Ozona, Coleman began work as a ranch hand wrangling horses on the Hoover Ranch. He became a cowboy. In common ranching terms, "greenhorn" refers to anyone new at the job. The term is really a cowboy insult, implying that one is still learning his occupation. The name stuck with Coleman Young Mankin, however, and so he signed his name "Green Mankin" for the rest of his life.

Most people have no clue where Ozona is located. Ozona is as remote as one can imagine, 82 miles southwest of San Angelo on Interstate 10; 112 miles east of Fort Stockton, 76 miles north of Del Rio. Approximately 3,700 people live there today; about four times more than when "Charlie" Mankin lived there. Ozona is the only town in all of Crockett County, the fourth largest county in Texas.

As Coleman Young Mankin was growing up in Coleman, Myla Boehmert was born and growing up in Dallas. She attended college in Denton, Texas, at the College of Industrial Arts, originally established in 1901 as the Girls Industrial College. Its first classes were not held until 1903, and in 1905 the name of the college was changed to the College of Industrial Arts. In 1935 the school's name again was changed to Texas State College for Women, then to Texas Women's University in 1957.

The education of women was not a high priority when Myla attended college. She was an anomaly among the young women of her day. After Myla graduated, she worked in Ozona teaching kindergarten. She made history by landing the first public kindergarten teaching position in the State of Texas. It was also the first kindergarten in Ozona. Just imagine the stir in Ozona among all the cowboys when Myla started her teaching career. She probably could have had her pick, but Green Mankin was the man of the day. They married in 1930.

Charlie's parents, the cowboy and the school teacher, each played important roles in raising their son. Growing up on a ranch with a hard working father and a school-teacher mother provided some special chemistry for Charlie's formative years. Charlie's mother probably strongly emphasized education during his childhood.

Dallas to Stoney, Texas

When Green Mankin married, he was forced back to reality. He had to think more seriously about making a living, especially when Myla became pregnant. Back then women could

not be married and/or pregnant as kindergarten teachers. So she returned to Dallas to have the baby. (Charlie Mankin was born in Dallas in 1932.) Green followed her, giving up the life of a cowboy. Myla and Green lived with her parents for three years in Dallas. Green took a hard job loading steel for a cotton gin. Afterwards Myla and Green saved enough money to buy a farm in Stoney, Texas where Charlie's sister was born in 1936.

The Mankin family spent the next four years in Stoney. Charlie started school in a two-room school house. One room held grades one through four; the second room held grades five through eight. There Charlie completed grades one through three, and then was "double promoted" and upgraded one year as Texas went from an 11-year to a 12-year curriculum. He obviously showed early signs of being very bright.

Stoney to Ozona, Texas

Myla and Green Mankin moved back to Ozona where Green went into partnership with Joe Clayton, setting up a Purina Feed store. By the time Charlie finished high school in Ozona, Joe Clayton and Green Mankin bid for some ranchland that had been used by the Army during World War II to train an armored division for the assault on Germany. They bought about 19 sections of land (69,960 acres) near Brownwood, Texas.

The first summer after graduating from high school, Charlie worked on the new ranch putting up a fence line with a crew of Mexicans laborers. The work was hard, living and working out of two jeeps. The line crew erected 22 miles of three-strand, barbed-wire fence. They dug every posthole in hard caliche soil with a steel bar, then excavated the loosened soil with a coffee can. They spent their nights under the stars. Every other weekend, Charlie would bring the crew to a hotel in Brownwood where they could clean up and take a break from the hot Texas sun. The Mankin ranch later ran 600 head of cattle and 6,000 head of sheep. Today Dr. Mankin recalls, "There were some good years and some bad years in the ranching business." That part of Texas has a way of making people feel small, and all the time Charlie spent on the range probably had a positive effect on his approach to life.

After that first fence-building summer, Charlie's father gave him a choice. While riding horseback through a pasture, Green offered Charlie the chance to continue working on the ranch (building fence) or going to college. Green said, "I heard that the University of New Mexico is a great school," and suggested chemical engineering was the field of choice. Charlie did not know where his dad got that advice, but he decided that college was a better option than long hours of putting up fence. As a gifted athlete, Charlie was able to make the basketball team as a "walk-on" at the University of New Mexico (UNM). Unfortunately his basketball career ended when he had a serious knee injury. This trick of fate, however, led Charlie directly into the field of geology.

Walking around the Albuquerque area to strengthen his knee, Charlie hiked through some arroyos and abandoned streambeds that gave him a clear view of the geology of this beautiful place. The walks kindled an interest in Charlie for geology. Charlie was hooked, and began inquiring about geology. He asked a friend, "How do you learn about rocks?" His friend pointed him to the geology department, where he met Sherman Wengerd, a geology professor. Professor Wengerd recommended some geology books to Charlie that would convince him to study geology. (Sherman Wengard received his master's degree in geology from the OU where Dr. Mankin was to make history. Because he only spent his freshman year at UNM, Charlie never took a course from Wengard.)

Charlie devoted all his time to his geology studies. He entered the University of Texas at Austin (UT) where he earned B.S, M.S. and Ph. D. degrees. During Charlie's college years, he established many life-long friendships that helped him in many ways during his career in Oklahoma.

Getting Educated...University of Texas (Austin) and Caltech

Charlie Mankin arrived at the UT campus during a time of rapid change. While he was an undergraduate, the geology department had a faculty turnover rate of 80%. Mr. Ronald DeFord, department chairman, was responsible for the change. DeFord later was Charlie's master's thesis advisor.

Charlie took it upon himself to learn more math and science in the latter portion of his undergraduate education to prepare himself for his graduate work. His masters-degree project involved mapping the geology along the Rio Grande between Texas and Mexico at Tierra Viaja. The field conditions there were rather primitive; graduate students resided in abandoned guest cottages. The nearest store was about 50 miles away, so it took some effort to get subsistence supplies. The store owners were two brothers Charlie got to know very well.

When it was necessary to cross the Rio Grande to study the geology, only a cable with a washtub attached provided conveyance across the Rio Grande. People put their clothes in the tub to keep them dry, got into the river, and then pushed the tub across the river. Their bodies got wet, but their clothes didn't. Apparently the exposures were better on the other side of the Rio Grande (in more ways than one).

Dr. William Muehlberger, Charlie's graduate advisor, was part of the new faculty at UT. Charlie's dissertation thesis consisted of geologic mapping in a remote portion of northeast New Mexico. This exposure to nature in the American Southwest must have had some positive effects.

While Charlie was mapping in New Mexico, he became a local hero. A local rancher told Charlie that a water witcher had caused him to drill four dry holes, all on an anticline. Charlie told him not to drill on top of the anticline, but to

go 200 yards either north or south and drill to find the water he needed. When the rancher discovered water, Charlie's reputation as a local hero was assured.

Dr. Muehlberger arranged for Charlie to do post doctoral study at the California Institute of Technology (Caltech) after he finished his doctorate at UT. When Dr. Mankin arrived at Caltech, the French geologist with whom he was to work had resigned. While Dr. Mankin was teaching several courses at Caltech, he got a call from Dr. Muehlberger telling him about a position at OU.

The Oklahoma Experience

Dr. Mankin had gravitated toward a more technical background (math and the more difficult sciences) while in his studies at UT. When he arrived at OU, he immediately began to improve the existing program by requiring geologists to take calculus. This caused a furor among students and some alumni who were sending their children to OU. But the President of OU, George Lynn Cross, backed Dr. Mankin's proposal.

One day, in the early part of Dr. Mankin's career at OU, he walked into the Geology Department office. A department secretary asked him, "Why aren't you in the faculty meeting with Dr. Cross?" He responded, "What faculty meeting?" His first thought was, "Oh-my-gosh! I missed a meeting with the President!" As he started to walk out, another call came from Ada Arnold, the secretary for George Lynn Cross. The President wanted to talk to Dr. Mankin immediately.

It was a long walk from the School of Geology to the President's office that day. Along the way Dr. Mankin was considering the possibilities. Had he pushed too hard for calculus? As he entered the President's office, its immense size was immediately apparent. Ada Arnold was waiting for Dr. Mankin to arrive. She said immediately, "He's waiting to see you." There was no emotion, and no hint of what was to come. The next few steps into the office of President George Lynn Cross must have been some of the most difficult steps for Dr. Mankin. He still remembers the long distance from the office door to the desk of the President.

President Cross addressed Dr. Mankin: "Mankin....," he paused. Dr. Mankin said, "Yes, sir" and took a breath to await his fate. Then President Cross continued, "This morning I had your colleagues over for a little visit, and I told them I was appointing you the director of the department. Let me know if you need anything." That was it! Dr. Mankin had a hard time realizing what had happened. He walked passed Ada Arnold again, but now she was smiling and gave Dr. Mankin a big, "Congratulations!" She said, "I am sure you'll do very well." She had known all along what was happening. Although it had been a long walk over to Cross' office, the walk back was a little more pleasant. Dr. Mankin was now responsible for the future of the School of Geology at OU. It was a big step from working on the family ranch in west Texas.

Three years after Dr. Mankin became director (1967), the School of Geology became the School of Geology and Geophysics, and he continued to push for more technical training. He also made many lifetime friends in that department, one of whom was Dr. Patrick Sutherland, the famous paleontologist.

Pat Sutherland

Two years after Dr. Mankin arrived in Oklahoma, he visited the local airport. While taking a test flight, the pilot turned the plane over to him. He loved that first experience and quickly became a qualified pilot. Being a pilot came in handy when he or other faculty needed to fly to various destinations. On one occasion, Dr. "Pat" Sutherland was with him, but Pat was very tense while flying with Dr. Mankin as the pilot. As they maneuvered to for a landing, Pat became very excited and grabbed Dr. Mankin covering his eyes. Now there were two excited people in the airplane. Somehow Dr. Mankin managed to get free from Pat's hands to make the landing. In spite of that adventure, the two were the best of friends for life.

The Rest is History

In 1967, Dr. Mankin became the Director of the OGS; he also became an active voice for the State of Oklahoma. He came in contact with people at all levels, both officially and informally. In spite of his position, Dr. Mankin never failed to give people freely of his time. He was often seen answering the phone for the most trivial questions. Even though he was at the top of the hill, he always took time to hear what other people had to say.

My Interview with Dr. Mankin

After I lost my job in the oil industry, my family and I moved in with my parents in Dallas, Texas. Jobs were scarce, so when I heard about a job in Oklahoma, I jumped at the chance. I met Dr. Mankin at a gate in the Dallas airport and walked with him to the next gate as he connected flights. Most likely he was traveling to Washington, D.C. to testify in front of a congressional committee. I was nervous, but once I met him at the gate, there was no longer any opportunity to be nervous. We both walked very rapidly while discussing the job opportunity in Oklahoma. In the blink of an eye, the interview was over. He climbed onto the next plane with my resume, and I had an empty feeling that I should have done more with the time we had. Fortunately I had worked in Alabama with some of Dr. Mankin's professional colleagues, who were also my references. I got the job and have worked in Oklahoma ever since. I will always remember that interview.

Centennial Celebration

Dr. Mankin made history at the OGS and at OU; his path at OU paralleled those of the first two directors at the OGS. After getting his master's degree at the University of Nebraska, Charles Newton Gould, was commissioned by the University of Oklahoma to set up a geology department in 1900. Then in 1908 Gould left the Department of Geology to become director of the OGS.

When Gould left the Department of Geology in 1908 to become the Director of the OGS, Dr. Daniel Webster Ohern became head of the Department of Geology. In 1911 Gould could not resist the temptation, a powerful one in Oklahoma, to get into the oil business. When Gould left, Dr. Ohern took over as Director of the OGS. The path to a leadership position in geology at OU seemed to repeat itself for Dr. Mankin. First, he was named the Acting Director of the School of Geology (1963); a year later (1964) he was appointed Director; and four years later (1967) he became the Director of the OGS. He held both directorships jointly until 1977.

Charles Newton Gould, the first Director of the Department of Geology, heavily influenced Everette Lee DeGolyer, a student at OU. DeGolver became what I consider the Winston Churchill of geophysics. He aggressively sought out every geophysical method that might be used for oil and gas exploration. He set up one of the largest geophysical contracting companies in the world (Geophysical Services, Inc.) as a result and later set up Texas Instruments Incorporated. Daniel Webster Ohern worked with John Clarence Karcher, another OU graduate, to develop the seismic reflection method. Dr. Ohern chose a known geological structure in the Arbuckle Mountains that was used by Karcher to test the basic concepts of seismic reflection. During the experiment, Karcher "migrated" the data in order to interpret correctly the reflection from a dipping reflector. This was not just local Oklahoma geology history; Ohern and Karcher helped to shape the future of the world! The seismic reflection method developed here in Oklahoma is the key method of finding oil and gas today.

Under Dr. Mankin's leadership, the School of Geology became the School of Geology and Geophysics in the early 1960s. He recognized the important contribution in geophysics that Oklahoma made to the rest of the world.

Summary

Dr. Charles J. Mankin has walked with big men and small men. His place in the history of the University of Oklahoma system is well established. In spite of all this, Dr. Mankin has not allowed any of his accolades change him. Despite the challenges, he remains true to his principles, always keeping the common good in mind. Certainly working long hours in remote locations played a role in his early life. His

mother, too, influenced Dr. Mankin, especially in terms of the importance of education.

Finally, I was tempted to downgrade the influence of the family tree because of its possible association with the Younger brothers; however, when you look at what his father and paternal grandfather accomplished, one realizes that there had to be more to those cowboys than first meets the eye. Dr. Mankin's father was a successful businessman and rancher. In spite of only having a third grade education, he was an avid reader. Dr. Mankin's father was "strong as an ox," and taught his son how to work hard and finish a job. Once when asked why Dr. Mankin was not interested in going into ranching, he said, "...because I could never be as successful as Dad was."

Whether you believe he inherited his character or developed it by working in isolated locations, there can be little doubt that Dr. Charles J. Mankin has a will of iron and a heart of gold. He cares about people and that is unlikely to change. He is truly one of the constants in the universe. What more can one say?!

Acknowledgements

The author expresses his appreciation of History of the School of Geology and Geophysics, The University of Oklahoma by George G. Huffman (1990).

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DR. CHARLES MANKIN

AND THE

OKLAHOMA GEOLOGICAL

SURVEY

2007
CENTENNIAL ENERGY
ADVOCATES EDUCATION
AWARD

INTERNATIONAL ENERGY POLICY CONFERENCE, TULSA, OKLAHOMA SEPTEMBER 13, 2007



JUNE

- **06—10** Oklahoma Independent Petroleum Association (OIPA) Annual Meeting, Dallas, TX.; information: (405) 942-2334.
- **18 Horizontal Drilling Workshop**, Moore Norman Technology Center; Norman, Okla. Information: Oklahoma Geological Survey; phone (405)325-3031 or (800)330-3996. E-mail: mjsummers@ou.edu; website: http://www.ogs.ou.edu.

SEPTEMBER

20—25 American Institute of Professional Geologists (AIPG) Annual Meeting, Flagstaff, Ariz.; website: http://www.aipg.org.

OCTOBER

- 05—09 Celebrating the International Year of Planet Earth: Joint Annual Meeting between The Geological Society of America (GSA), Soil Science Society of America (SSSA), American Society of Agronomy (ASA), Crop Science Society of America (CSSA), and the Gulf Coast Association of Geological Societies with the Gulf Coast Section of SEPM (GCAGS), hosted by the Houston Geological Society (HGS), Houston, Texas. Information: http://www.geosociety.org/meetings/.
- 21 and 23 Oklahoma Gas Shales Field Trips, Oklahoma City, Okla.; information: Oklahoma Geological Survey; phone (405)325-3031 or (800)330-3996. E-mail: mjsummers@ou.edu; website: http://www.ogs.ou.edu.
- 22 Oklahoma Gas Shales Conference, Oklahoma City, Okla.; information: Oklahoma Geological Survey; phone (405)325-3031 or (800)330-3996. E-mail: mjsummers@ou.edu; website: http://www.ogs.ou.edu.
- 29 The Real Deal Midcontinent Prospect Expo, sponsored by the Oklahoma City Geological Society and the Oklahoma Geological Survey, Clarion Meridian Convention Center, Oklahoma City, Okla.. Information: Oklahoma Geological Survey; phone Michelle Summers (405)325-7313 or Sue Crites (405)325-8076 or (800)330-3996; e-mail: mjsummers@ou.edu or scrites@ou.edu.; website: http://www.ocgs.org/.

NOVEMBER

10—13 Society of Exploration Geophysicists (SEG), Las Vegas, Nev. Website: http://www.seg.org.

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