





Volume 16. Issue 4

July Meeting in Littleton - See Back Page

July, August 2005

## The Other Father of Radio

by David Boyle, CRC Member

#### Chapter 1

It was a dark and stormy night out in the Atlantic Ocean. At 9:00 p.m. a voice came over the air waves to ships of the United Fruit Company. The astonished crew heard the voice of Reginald Fessenden followed by a short selection of music and singing. Concluding the program was Fessenden himself wishing his listeners "A Merry Christmas" for it was Christmas Eve, 1906!

Six years earlier, Reginald Aubrey Fessenden, indeed, had the first been person successfully broadcast the sound of a human voice; even though quite distorted. This earlier transmission was between two 50 foot masts, 1 mile apart on Cobb Island, located in the Potomac River, Washington, D.C. The date was December 23, 1900. Up to that moment the technology at time limited wireless that broadcasting to morse code of "dots and dashes," produced by Marconi's damped wave oscillations from spark gap transmission equipment.

Born in 1866 near Quebec, Canada, Fessenden showed an

amazing aptitude in mastering languages, mathematics and music. As a young man he subscribed to "Scientific American." He also was an avid admirer of Thomas Alva Edison. He even kept a scrap book of magazine articles and news clippings relative to Edison's inventions. He eventually found his way to New York to seek an interview with the inventor. That failed - but he got

a job through the back door working as an instrument tester at one of Edison's installations. He was very disciplined and was continually seeking technical experience and scientific knowledge, a habit that he pursued through his life. He quickly acquired the position as "chief tester." He was always suggesting improvements and applying his methods to Edison's electrical apparatus. This gained the attention of Mr. Edison who then employed him as an assistant in what was considered the finest experimental laboratory in the world.

At the age of 24, Fessenden became chief chemist as he had already developed many

inventions, some for Edison and some on his own endeavors. George Westinghouse offered Fessenden a supervisory position to work on generators and light bulbs. He designed new lead-in wires for Westinghouse light bulbs allowing Westinghouse to supply all the bulbs for the huge Columbian exposition in Chicago. One accomplishment lead to another and he was offered a professor appointment at Purdue University in Lafayette, Indiana. There he was given freedom to purchase equipment and conduct experiments furthering his cherished ambitions. the development of sound vibration leading to transmitting sound



without wires.

During several employment stints again with Westinghouse and then with the United States Weather Bureau, he was able to further his experiments including those conducted at a testing station on Cobb Island with 50 foot aerial towers. These experiments lead to impressive demonstrations of improved wireless technology.

### COLORADO RADIO COLLECTORS ANTIQUE RADIO CLUB

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### MESSAGE FROM THE PRESIDENT

We had a good meeting in Castle Rock on May 15<sup>th</sup>, and everyone seemed to enjoy the raffle and show and tell.

For those of you who did not attend, the May meeting is when we elect officers, and so Charlie Brett and I have both agreed to stay on for another year! I think that translates to us being slow learners, so maybe we will eventually figure out what we are doing.

Since our "fiscal year" runs June to June, membership dues of \$12.00 are also due at this time, so if you are not going to be able to attend in July and have not yet paid you dues please make out your check to Charles Brett and mail to him at 5980 Old Ranch Road, Colorado Springs, CO 80908!

And as always, we need articles for future flash publications!

Hope everyone is enjoying their summer, and don't forget to rummage through your goodies for more raffle items!

See you on July 10<sup>th</sup> at the Bemis Library in Littleton,

#### **CRC OFFICERS 2005-2006**

Trooperson &

Drogidont

| <u>President</u>        | <u> Treasurer &amp; </u> |
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#### **CRC MEMBERSHIP**

Annual membership in the CRC runs from <u>June to</u> <u>June</u>. Annual dues entitles members to a full year (6 issues) of the club publication "The Flash!". Membership provides participation in club events such as the annual April Show, mid-summer picnic, October auction as well as our semi-monthly meetings and swap meets. Dues also entitle you to club officer elections, excellent discount prices on current hobby publications and the Antique Radio Classifieds annual subscription raffle every May!

Current annual dues are \$12. New memberships will be prorated to renewal on the following June, i.e new members joining in May should submit \$12, in December \$5, etc.

#### **CRC MEETINGS**

Meetings are held on the second Sunday of every other month starting in January (except 3rd Sunday of May) at 1:00pm. The meetings consist of business, "show & tell", raffles, swap meets, technical discussions and

#### **Continued from Page 1**

However, it was the transmission of speech which spurred Fessenden to greater effort. Taking days and nights he meticulously cut almost microscopic incisions into a phonograph cylinder to fabricate an interrupter that would break the circuit 10,000 times each second. The alternating current became the rudimentary r.f. carrier to be modulated by audio sound frequencies. The voice sound emanating from his "receiver" was almost unintelligible but persistence lead to improvements even through the distance was only 1 mile.

The historic first message was "one, two, three, four... Is it snowing where you are Mr. Thiessen?" So at Cobb Island on December 23, 1900 for the first time in history, intelligible speech was transmitted by electromagnetic waves. Thus the honor of first developing and then demonstrating



what now is termed "radio" desirably belongs to Reginald Aubrey Fessenden.

Searching to improve his wireless technology apparatus, he invented a barretter which was not much better that the only suitable detector at that time but improvements in his "hot-wire" barretter by 1902 led to some improvements in sound quality. It was his so- called "liquid barretter" detector that actually took sound improvement to the next level. By mid 1906, he was transmitting to various locations along the east coast using his newly developed alternator. This alternator built by General Electric to Fessenden's specifications was capable of 76,000 cycles (Hz) but in actual use Fessenden held it to 50,000 cycles to increase power output. The "stage was set" by December 1906 for that historic broadcast ( that first caught the readers attention at the beginning of this story ).

#### Chapter 2

Those early days in radio around the turn of the 20<sup>th</sup> century were marked by rapid development in wireless technology. Some of these mile stones were:

1895 - 1900 Gugliemo Marconi sends and receives wireless messages (radio telegraphy).

1901 Marconi receives first trans-Atlantic radio telegraphy signals.

1904 J. Ambrose Fleming developed his 2 element "valve" (diode-tube). He Remembered Edison's experiments five years earlier with his so-called "Edison's effect ". This "valve could be employed as a detector.

1906-7 Lee DeForest invents the triode vacuum tube amplifier.

The rest of the story - a summary of Reginal D. Fessenden's accomplishments;

- 1) As his work progressed, he evolved the heterodyne system, however, due to faulty construction and the fact that it was ahead of it's time, heterodyne principles applied to radio reception was not appreciated until the oscillating triode was devised thus allowing this principle to be utilized (1924 Edward Armstrong's superheterodyne circuit).
- 2) In conjunction with investors, founded the National Electric Signal Company (NESCO) with wireless telegraphy stations in several east coast cites. These installations established a record transmitting distance of 6,000 miles.
- 3) First person to conduct a two way wireless telegraphic communication across the Atlantic.
- 4) Invented the fathometer used to measure ocean depths. Also invented an array of underwater sending and receiving apparatus. (1912). He also adapted these inventions to detect submerged icebergs. Quite important given the sinking of the Titanic that year.

- 5) During WWI, he provided the British War Office with numerous ideas including methods to locate concealed artillery by sound; submarine finders and navigation aids.
- 6) He devised a primitive form of television he called the pheroscope. In 1925 he said this



The aging inventor plays voices broadcast by radio through a violin and a piano, 1924

invention was "capable of putting wireless vision into every house."

Unfortunately Fessenden spent much time defending his own place in history while additionally having to fight legal battles over financial and patent infringements. The legal suits that had consumed much of his life finally came to an end in 1928. It was reported that he won \$2.5 million from RCA. This enabled the Fessendens to move to Bermuda and allow Reginald to live out his life in relative comfort and satisfaction. Reginald died there July 22, 1932.

Fessenden once wrote "All our civilization is based on invention. Before invention, man lived on fruits, nuts and pine cones and slept in caves." His definition of an invention was: One who can see the application of means to supply demand five years before it is obvious to those skilled in the art." We should do as well!

## Remembering Dick Hagrman



Richard A. Hagrman 1934 - 2005

On May 16th Dick Hagrman, a founding member of the CRC, died after a long illness. As many of you know, until Dick's illness, he was an active member of the CRC from it's inception and had a tremendous knowledge of radio technology. He had held the positions of President and Treasurer and was involved and supportive of all our club activities. Dick was one of the very few CRC members who received the club's award for outstanding service.

He was born in Aurora Nebraska in 1934 but spent almost the last 50 years of his life in Littleton Colorado. During this time he and his wife Ann (also deceased) raised a daughter and two sons. For thirty years he was an engineer for Martin Marietta until his retirement in 1989. Dick's passion for radio extended back to his childhood in Omaha and resulted in his impressive collection of antique radios - most of which are 30s cathedrals and tombstones.

Those of us who knew Dick will remember a great friend, a devoted member of the CRC and an irreplaceable font of knowledge of the technology that is long past but, like Dick, will be long remembered.

## The Otis Chartier Auction Report by Steve Touzalin photos submitted by Bill Grimm

On Saturday, June 4th, longtime CRC member Otis Chartier held an auction sale of his Antique Radio collection, and other household goods, in



Jerry Tynan kicking an object to see if it's a "live" radio!

Parker, Colorado. A good-sized crowd, along with a handful of CRC members were on-hand for the sale.

As report in the May/June 2005 issue of the Flash, some of the radios for sale included: Radiola Model 18 w/speaker Model 100-A, Radiola Model 25, Majestic Model 50 Cathedral w/stand, 3- Philco Cathedral's, Zenith Transoceanic Model 3000, Atwater Kent Model 55 w/F-4 speaker, Columbia Victrola Record Player, and an Atwater Kent Model 60 Console. There was a large selection of several Table models, Cabinet and Console models for sale. Several 'project' radios, radio chassis's, empty cabinets, speakers, Rider's Manuals, several pieces of test equipment, numerous *lots* of vacuum tubes and parts were also included.

Several *lots* of household items and tools were put up for auction first. The auction then moved to a large storage building which housed all the radios and related equipment. Once inside, the bidding progressed around the inside perimeter of the storage building. The auction then moved to the center aisle for the final run. Bidding on the radios seemed on the low side, but there were instances of bidding wars drawing premium prices. These included some of the high-end radios, and a LARGE box of tubes, which had smaller boxes on the top

containing several boxed 01A's, 71A's, 45's, and other highly sought after tubes. Several of the more common Console sets went rather low, and unfortunately, several of the large Cabinet sets did not sell at all.

Despite the rain and chilly day, the auction went quite well. Everyone appeared to have had an enjoyable time. As there was something for everyone, none of the CRC members left

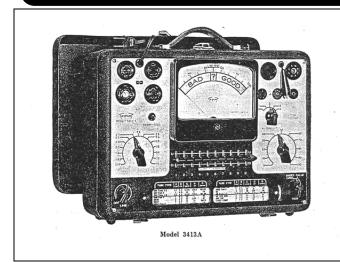


A bidder peruses the many radios on display in the storage shed.

empty-handed!



# Repairing a Triplett 3413-A Tube Tester by Steve Touzalin, CRC Member



The Triplett 3413-A is a cathode emission type tube tester that will test the older 4, 5, 6, 7 pin tubes, loctal and octal, and the 7 and 9 pin miniature tubes. It will also test "eye" tubes and test ballast tubes for continuity. This particular tester indicated a high GOOD reading on anything that was tested, known bad tubes, even without a tube in the tester at all.

On a visit to Triplett's web site (http://www.triplett.com/), I learned that they would send a photocopy of manuals for older test equipment, if they had an original instock, free of charge. I contacted them, and a photocopied manual, with schematic, arrived almost immediately. Pretty good service for a product of theirs that is over 50 years old.

Following the instructions in the manual, the tester was removed from the case. The circuitry, a mixture of switches and resistor networks, was not to difficult to check out with an ohmmeter. The resistors all checked out OK, however two wires were detached from the TEST switch. After checking the schematic several times, the wires were reattached to the proper lugs on the switch. As there was only one capacitor, a 0.1 mfd 400 Volt DC unit, it was replaced. The unit was given a test run, with unsatisfactory results. The only component left that could be faulty was a copper oxide rectifier. It was replaced with a 1N4005 Silicon Rectifier Diode (1A, 600 PIV). After using the tester for quite some time, further research suggested that possibly a resistor should have been added in series with the silicon diode, but the tester has worked excellently without one.

The tester was crudely calibrated using two other tube testers and a handful of tubes that would on all three testers. The adjustment potentiometer for the Triplett tester was tweaked so that the Triplett meter matched the other two meters as closely as possible for the different tubes as they were switched back and forth between the testers. A supplemental tube roll chart was obtained from "Play Things of the Past". The repaired Triplett tester has been successfully used to test over 300 tubes, and some of them even tested "?" or BAD, as they should have. I hope to able to use this tube tester for a longtime yet to come.



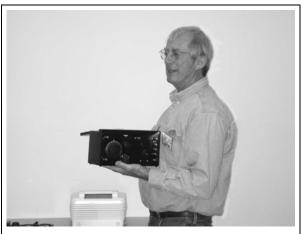
## May/05 CRC Meeting & Show N' Tell



Bill Dial show us the Miller model 565 crystal set kit that he purchased back in 1958.



Charles Brett displays a Hickok 47 tube tester, the very first unit that this company made.



Mark McKeown is holding his extremely well restored Crosley 51 1924.



Rich Kubersky brought in this WWII "moral" radio model 6000 made by Industry Tool & Die.



Tom Puloit, our resident early wireless expert, demonstrates an Acme Reflex kit radio, circa 1924.



Steve Touzalin describes the details of his great restoration of a Stromberg Carlson 1101.

Sub

# **Collector Books for Sale**

|   |         |   |  |   |   |   |  |  |  |   |   |  |  | 10   |   |  |  |  |   |  |   |  |  |   |
|---|---------|---|--|---|---|---|--|--|--|---|---|--|--|--|---|--|--|--|---|--|---|--|--|---|
| CRYSTAL CLEAR VOL 2<br>Maurice Sievers, 252 Pgs, 1995 | 190     | Alan Douglas, 285 pgs, 1991 CRYSTAL CLEAR VOL 1             | RADIO MANUFACTURES OF THE 1920'S VOL III               | RADIO MANUFACTURES OF THE 1920'S VOL II                             | RADIO MANUFACTURES OF THE 1920'S VOL I<br>Alan Douglas, 225 pgs, 1988 | RADIO AND TV PREMIUMS<br>Jim Harmon, 256 pgs, 200+ photos, 1997 |  | ) 1969<br>28, 1000 photos, 1998                                | ıble Radio Guide 'III, 3                           | CLASSIC TV'S, PRE-WAR THRU 1950'S<br>86 pgs, color & b/w pics, descriptions, etc. |   | ZENITH RADIOS THE EARLY YEARS 1919-1936, Cones<br>1997-98 Price Guide, 223 pgs, 100's Photos, Desc., Hist. | THE ZENITH TRANS-OCEANIC (THE ROYALTY OF RADIOS) Bryant and Cones, 160 gps, 1995 \$25    | MOS, 1955-1965<br>color pics, info, descr.   | ПП  | RADIO, EVOLUTION OF THE - VOLUME TWO 226 pes Radios of the 1920s to 1960s, with 93-94 values                     | E 1997   | ANTIQUE RADIO RESTORATION GUIDE - 2rd EDITION Johnson, 144 pgs, repairing, refinishing, cleaning | GUIDE TO OLD RADIOS, POINTERS 2nd EDITION Johnson, 277 pgs, 1995-96 prices                  | ž  | RADIOS, (GENUINE PLASTIC) OF THE MID CENTURY Jupp & Pina, hard bound, 219 pgs, 1998 PG, 450+ color pics | (/19) 495-8660, Drett3/29@aoi.com. voia att other ustings  | shipments: add \$2.00 postage for each book ordered. Info/order: Charles Brett, 5980 Old Ranch Road, Colorado Springs 80908, | Special CRC prices. Order at club meetings. |
| \$29.95   | \$29.95 | \$29.95   | \$27.70  | 620.02  | \$24.95   | \$24.95   | \$29.95  | \$29.95  | 3-'62<br>\$29.95                                   | \$18.95   | \$29.95   | \$29.95  | )S)<br>\$29.95   | \$29.95  | \$16.95   | \$24.95  | \$33.05  | \$14.95  | \$19.95   | \$18.95  | \$39.95   | <i>T USUN</i><br>Refail  | red. Ir<br>Sprin   | s. Mail                                     |
| \$22.00   | \$22.00 | \$22.00   | \$22.00  | 53  | \$19.00   | \$19.00   | \$22.00  | \$22.00  | \$24.50  | \$15.00   | \$22.00   | \$22.00  | \$22.00  | \$22.00  | \$13.00   | \$19.00  | \$18 00  | \$12.00  | \$15.00   | \$15.00  | \$28.00   | Club   | 16/order:<br>1gs 80908,  | ail order                                   |
| THE FABULOUS VICTROLA "45"                            | NUAL    | THE WEEKEND REFINISHER Bruce Johnson, 296 Pgs, 1989 \$12.00 | THE WOOD FINISHER Bruce Johnson, 341 Pgs, 1993 \$12.00 | A. A.I WALEK NEW I<br>Williams & Wolkonowicz, 108 Pgs, 2003 \$25.95 | Mark V. Stein, 240 Pgs, 2002 \$29.95                                  | Mark V. Stein 358 Pgs, 1997 \$28.95                             | MACHINE AGE TO JET AGE - VOL I  MACHINE AGE TO JET AGE - VOL II  MACHINE AGE TO JET AGE - VOL II | ARTHUR COLLINS RRADIO WIZARD Ben Sterns, 394 Pgs, 2002 \$18.95 | TUBE LORE<br>Ludwell Silbey, 186P gs, 1996 \$29.00 | CLASSIC CONE SPEAKERS Buford & Jane Chidester, 122 Pgs, 2001 \$25.95              | RADIOCRAFT JUBILEE - REPRINT OF 1938 EDITION Hugo Gernsback, Vestal Press | John Slusser, 264 Pgs, 2001  | Sein, 239 pgs, 2001  Sein, 239 pgs, 2001  ANTHORIE BANDOS COLLECTORIS CHITDE 5th EDITION | COLLECTOR'S VACUUM TUBE HANDBOOK, VOLUME I Robert T. Millard, 196 Pgs, 2001 \$25.95 SII VEEDTONE ANTIQUE BANGOS 1020, 1027 | TUBE TESTERS AND CLASSIC ELECTRONIC TEST GEAR Alan Douglas, 166 Pgs, 2000 \$25.95 | COMPLETE PRICE GUIDE TO ANTIQUE RADIOS: PRE-WAR CONSOLES Mark Stein, 235 pgs, 100's of b/w photos \$29.95 \$22.0 | NOVELTY RADIOS, VOLUME 2<br>Mary Bunis & Robert Breed, 199 Pgs, 1999 \$19.95 | NOVELTY RADIOS, VOLUME 1  Marty Bunis & Robert Breed, 223 Pgs, 1995  \$18.95                     | COLLECTOR'S GUIDE TO VINTAGE TELEVISION  Durbal & Glenn Bubenneimer, 200 Pgs, 1999  \$15.95 | THE RADIO COLLECTOR'S DIRECTORY AND PRICE GUIDE, 2ND<br>Robert Grinder, 524 Pgs, 1995<br>\$26.95 | RADIO DIAGRAM SOURCEBOOK Richard Gray, 264 Pgs, 1996 \$18.95  | John Stokes, 264 Pgs, 1997 \$29.95   | George A Fathauer, 112 Pgs, 1999 \$26.95   | RADIO TTIRES AND ROXES OF THE 1920'S        |
|   | \$10.00 | <b>\$10.00</b>  | \$10.00  | \$19.50   | \$22.00   | \$23.00   | \$21.00  | \$14.00  | \$15.00  | \$19.50   | \$12.00   | \$15.00  | \$25.50  | \$19.50  | \$19.50   | NSOLES<br>\$22.00  | \$15.00  | \$15.00  | \$13.00   | \$21.00  | \$15.00   | \$22.00  | \$20.00  |   |
|   |         |   |  |   |   |   |  |  |  |   |   |  |  |  |   |  |  | OLD TIME RADIOS<br>Joseph Carr, 256 Pgs, 1991  | ANTIQUE RADIOS 6TH EDITION<br>John Slusser, 320 Pgs, 2004                                   | E.H. SCOTTTHE DEAN OF DX, 2ND EDITION Marvin Hobbs, 240 Pgs, 2003                                | THE ALL AMERICAN FIVE RADIO<br>Richard McWhorter, 92 Pgs, 2003  | ZENITH ILLUSTRATED CATALOG AND DATABASE 1936 - 1945<br>Cones, Bryant & Blankinship, 182 Pgs, 2003 \$29.9 | ZENITH RADIOS THE GLORY YEARS 1936 - 1945<br>Cones, Bryant & Blankinship, 256 Pgs, 2003                                      | Phil Vourtsis, 176 Pgs, 2002                |
|   |         |   |  |   |   |   |  |  |  |   |   |  |  |  |   |  |  | \$19.95  | \$24.95   | \$29.95  | \$19.50   | . 1945<br>\$29.95  | \$34.95  | \$29.95                                     |
|   |         |   |  |   |   |   |  |  |  |   |   |  |  |  |   |  |  | \$15.00  | \$19.50   | \$27.50  | \$15.00   | \$22.00  | \$25.50  | \$22.00                                     |

The Flash! -8- July, August 2005

## The Open Trunk

Member submitted advertisements



mission of Sell/Want ads are always free to CRC members. Non-members may advertise in the Flash for \$0.20 a word. Display advertising is available by contacting the CRC publisher for info and rates.

**WANTED:** Info regarding the Victoreen Radio Company and/or the A & M Radio Company of the 1920's. Also, want info about premiums given by radio stations in the 1920's-30's. Also, would like to talk to anyone who has the old travel log books of maps given by gas companies in the 1940's-50's. If anyone can help, please contact;

Wayne Gilbert.

(303) 431-6774, wagil@aol.com

05/05

**WANTED:** Morse keys/bugs/paddles, Allied Radio/ Knight Kits, "heavy metal" communications gear (Hallicrafters, Hammarlund, etc.).

Robert Baumann,

(303) 988-2089, rgbdenver@att.net

05/05

**WANTED:** Zenith 5905 shutter dial chassis. Good cabinet for Westinghouse "columnaire" deco grandfather clock radio. Tuner chassis and a volume control knob and one band switch knob for Sparton 1568. Working or restorable Zenith port hole television. Please contact;

**Bob Cofer**, (303) 257-9598

05/05

**WANTED:** Repairable 32 volt farm radio to run from my 32 volt farm lighting system. Also, LS-3 military speaker to go with my BC-348.

Mark McKeown

(303) 278-3908

mmckeown@direcway.com

03/05

**WANTED:** 1954 Telefunken radio/phonograph. Radio is a lost family heirloom, model number unknown. It is approx. 50 inches wide, 18 inches deep, and 40 inches tall with a dark brown finish.

There are tall rounded doors on each end to hold records. A front panel opens with the push of a button located near the top-center to expose the phonograph. Above the panel are the two large tuning knobs and push-buttons. The front panel has horizontal boards running across the grill. The radio was last seen in September in Colorado Springs. Anyone with any info please contact;

Chuck Schultz, (303) 492-9072

Chuck.Schultz@cusys.edu

03/05

**WANTED:** A Triplett Model 1200-A VOM. If anyone has one they can part with, please contact; **Steve Touzalin**, (303) 988-5394

stevet@champmail.com

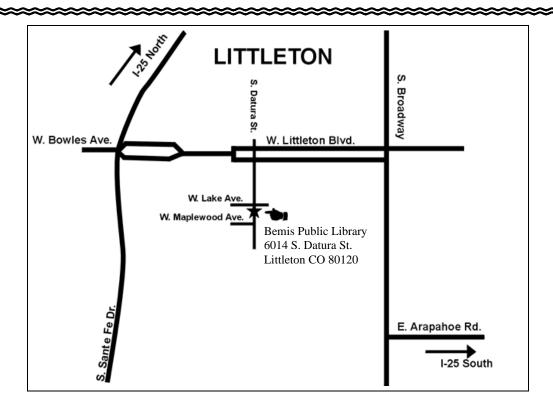
07/05

## **Upcoming Hamfest**

Denver Radio Club Hamfest 2005 Sunday, August 21st, 8:30am to 2:00pm Jefferson County Fairgrounds 15200 West 6th Avenue Golden, CO 80401

The Flash! -9- July, August 2005

## For our July 10th, 1:00pm meeting .... We will be meeting at the Bemis Public Library, Littleton



**Colorado Radio Collectors** 

Antique Radio Club 417 S. Queen Cir. Lakewood CO 80226

FIRST CLASS MAIL