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The Astronomical Society of Las Cruces (ASLC) is dedicated to expanding public awareness and understanding of the wonders of the universe. ASLC holds frequent observing sessions and star parties and provides opportunities to work on Society and public educational projects. Members receive the *High Desert Observer*, our monthly newsletter, plus membership to the Astronomical League, which includes their quarterly publication, *Reflector*.

Individual Dues are \$30.00 per year

Family Dues are \$36.00 per year

Student (full-time) Dues are \$24.00

Dues include electronic delivery of the *HDO*. Prorated dues are available for new members. Dues are payable to ASLC with an application form or note to: Treasurer ASLC, PO Box 921, Las Cruces, NM 88004

*ASLC members are entitled to a \$5.00 (per year) Sky and Telescope magazine discount.*

### ASLC Board of Directors, 2014

[Board@aslc-nm.org](mailto:Board@aslc-nm.org)

President: Rich Richins; [President@aslc-nm.org](mailto:President@aslc-nm.org)

Vice President: Steve Shaffer; [VP@aslc-nm.org](mailto:VP@aslc-nm.org)

Treasurer: Patricia Conley; [Treasurer@aslc-nm.org](mailto:Treasurer@aslc-nm.org)

Secretary: John McCullough; [Secretary@aslc-nm.org](mailto:Secretary@aslc-nm.org)

Director-at-Large: Tracy Stuart; [Director1@aslc-nm.org](mailto:Director1@aslc-nm.org)

Director-at-Large: Jerry Gaber; [Director2@aslc-nm.org](mailto:Director2@aslc-nm.org)

Immediate Past President: [csterlin@zianet.com](mailto:csterlin@zianet.com)

Director Emeritus: Walter Haas

### Committee Chairs

ALCor: Patricia Conley; [tconley00@hotmail.com](mailto:tconley00@hotmail.com)

Apparel: Ron Kramer; [ronjkramer@aol.com](mailto:ronjkramer@aol.com)

Calendar: Chuck Sterling; [csterlin@zianet.com](mailto:csterlin@zianet.com)

Education: Rich Richins; [Education@aslc-nm.org](mailto:Education@aslc-nm.org)

Grants: Sidney Webb; [sidwebb@gmail.com](mailto:sidwebb@gmail.com)

Librarian: **\*\*\*OPEN\*\*\***

Loaner Telescope: Frank Fiore; [ffchilehead@gmail.com](mailto:ffchilehead@gmail.com)

Membership: Judy Kile; [jkile@elp.rr.com](mailto:jkile@elp.rr.com)

Night Sky Network: **\*\*\*OPEN\*\*\***

Observatory:

Leasburg Dam: Rich Richins; [President@aslc-nm.org](mailto:President@aslc-nm.org)  
Jerry Gaber; [jerrygaber@gmail.com](mailto:jerrygaber@gmail.com)

Tombaugh: Steve Shaffer, [VP@aslc-nm.org](mailto:VP@aslc-nm.org)

Outreach: Chuck Sterling; [csterlin@zianet.com](mailto:csterlin@zianet.com)

Web-Site: Steve Barkes; [steve.barkes@gmail.com](mailto:steve.barkes@gmail.com)

*HDO* Editor: Ron Kramer; [ronjkramer@aol.com](mailto:ronjkramer@aol.com)

### September Meeting

Our next meeting will be on Friday, September 26, 2014, at the DACC Main Campus, Room 141, Technical Studies Building, starting at 7:00 p.m.

We will be discussing the Leasburg Observatory, including our presence, outreach, etc.

### New & Existing Member Package

Membership Chair, Judy Kile has sent member packages to all current members before the June meeting. These were sent via Yahoo!Groups email. If you did not receive your package, please let her know ([jkile@elp.rr.com](mailto:jkile@elp.rr.com)) and she will send you a regular email with the package.

### Outreach

Outreach is a very important part of ASLC. We are always looking for more volunteers to help us educate the public. Even if you do not have a portable telescope to bring to the events, please consider attending our public outreach programs to help answer questions, share knowledge and point out constellations in the sky.

### Events

ASLC hosts deep-sky viewing and imaging at our dark sky location in Upham. We also have public in-town observing sessions at both the International Delights Cafe (1245 El Paseo) and at Tombaugh Observatory (on the NMSU Campus). All sessions begin at dusk. At our Leasburg Dam State Park Observatory, we hold monthly star parties. Located just 20 miles north of Las Cruces, our 16" Meade telescope is used to observe under rather dark skies. Please see *Calendar of Events* for specific dates and times.

### Annual Dues

Please note that annual dues are due in January. Contact our Treasurer, Patricia Conley ([treasurer@aslc-nm.org](mailto:treasurer@aslc-nm.org)) for further information. Dues can be paid at the next meeting or via mail, sent to Treasurer ASLC, PO Box 921, Las Cruces, NM 88004.

Recent Outreach Events

by Jerry McMahan

**Saturday, August 16; Leasburg Dam State Park Observatory (Mega-Music and the Stars)**

This was a longer music event than normal. Ron Kramer, Judy Kile and Daniel Giron worked the afternoon event for the Friends of Leasburg. Daniel stayed on for the evening Astronomy part.

I brought the 8-inch SC, but was not sure if I should set it up since the weather did not look good. My cell phone app said the cloud cover was going to increase hour by hour. Since rain was also possible and my setup is a slow takedown, I decided not to take the scope out of the car. When Chuck Sterling arrived, he said that the Clear Skies Clock said that it was going to clear up. Score one for the Clear Skies Clock. It cleared up. There was lightening along the horizon for 360 degrees, but it was clear overhead.

I did contribute without a telescope by pointing things out to people. "That is a building. There is a table. See that bush over there." More productive members included Chuck with his 10-inch and Dave Doctor and his wife manning the 16-inch in the observatory. Daniel did his usual good job of teaching and Rich Richins brought the 10-inch Dobsonian.

Saturn and Mars were still in the sky as well as number of deep sky objects.

**Saturday, August 23; Sort of a Moongaze, International Delights Café**

I did an accidental Moongaze without a Moon, at the International Delights. The story goes like this. School started on August 21. The next day was Friday, August 22. I told my students that we would set up telescopes at the International Delights, the next day. I know that we were scheduled for Moongaze on the 30th. Obviously the math was just too difficult for me, as I realized that night at the club meeting. Since I told the class that I would be at the restaurant the next day, I had to bring the scope that Saturday in case any of the students showed up. I didn't think any of them would come, but it was a good thing that I did set up since one of the students did come with her husband.

I took the 8-inch setup since I knew we didn't have a Moon and that I would be mostly on Saturn. That scope was a better choice for Saturn.

**Saturday, August 30; Moongaze, International Delights Café**

This time it was a real Moongaze with a real Moon. I told my students about it again and that we would do it again on September the sixth. They probably think I am a hard worker. That is better than them thinking, "What an idiot."

We had an excellent turnout of both observers and club members. Daniel Giron came as a teacher, Tracy Stuart operated his 8-inch. Mo Azzolini bought his 6-inch Dobsonian and his wife and daughter. Chuck Sterling and his 10-inch were on Saturn. The telescope was on Saturn, not Chuck. I had the 125mm ETX. Steve Shaffer was occupied at the Tombaugh Observatory for Sky Safari.

Mo's daughter brought me a drawing she made of a telescope. Two of my current students showed up as well as two of my former students, including Mo.

We had a nice clear night. Saturn looked very good early in the evening even though it was fairly low in the sky and Earth is steadily is moving further away from the planet. The Cassini division was easily visible. The terminator, on the Moon, was near the Catherina crater group. All three craters showed rims catching the rising Sun, while the floors were still in darkness.

**Saturday, August 30, 2014; Sky Safari at Tombaugh Observatory**

This event was advertised in the Saturday Las Cruces Sun News. All three domes were open. Our telescope was on the Moon, Saturn, M70 (the Globular Cluster in Sagittarius) and M57 (the Ring Nebula in Lyra), in that order as they were setting to the west. There were 71 views through the eyepiece. The seeing was not very good, I think due to hot air currents in the telescope tube.

Through the evening I used our lowest magnification eyepiece, the 2-inch 75mm. Which seemed the perfect eyepiece for viewing M70 and M57

**Saturday, September 6; Moongaze/International Look at the Moon Day, International Delights Café**

The clouds cleared up at just the right time to observe the Moon, Saturn, and occasionally Mars. We also had a very good turnout of people coming to look through the scopes. I have not yet heard about any participation that the club may have contributed at the museum. Someone will probably report on it.

Ed Montes brought a very nice 102mm ED refractor. Chuck Sterling operated his 10-inch. I had the usual 125mm ETX. Clouds moved in again at around 10 o'clock so we gave up about that time.

An otherwise good session resulted in some bad news. One of the visitors came looking for me to tell me that her mother was in the hospital in El Paso and was not expected to survive. Her mother taught in the room next to me, at Canutillo High School, for many years. I know the entire family.

\* \* \*

**Calendar of Events (Mountain Time - 24 hr. clock)**

SEP 20	07:54	Mercury - Spica Conjunction
20	Dusk	DSO Upham
20 - 28		Oki-Tex Star Party (contact R. Richins for details)
22	20:30	Autumnal Equinox
24	00:14	New Moon
25	18:48	Moon - Spica Conjunction
26	19:00	ASLC Meeting; Room 141, DACC Main Campus, Technical Studies Bldg.
28	00:30	Mars - Antares Conjunction
OCT 01	13:33	First Quarter Moon
03	20:00	OUTREACH: Tombaugh Observatory Open House
04	Dusk	OUTREACH: MoonGaze; International Delights Café
07	14:19	Uranus at Opposition
08	20:30	Draconid Meteor Shower
08	04:51	Full Moon
08	04:55	Total Lunar Eclipse
09	20:30	Draconid Meteor Shower
12	03:58	Moon - Aldeberan Conjunction
15	13:12	Last Quarter Moon
16	14:32	Mercury - Inferior Conjunction
18 - 19		Kitt Peak Observatory trip (contact R. Richins for details)
18	17:30	OUTREACH: Music & the Stars; Leasburg Observatory; Jamie O'Hara
21	10:26	Orionid Meteor Shower
23	15:45	Partial Solar Eclipse
23	15:57	New Moon
24	19:00	ASLC Meeting; Room 141, DACC Main Campus, Technical Studies Bldg.
25	10:04	Moon - Saturn Conjunction
25	Dusk	OUTREACH: DSO Upham
30	19:48	First Quarter Moon
31	TBD	OUTREACH: Renaissance Faire Setup, Young Park

Be sure to visit our web site for the latest updates: [www.aslc-nm.org](http://www.aslc-nm.org)

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**August Meeting Minutes**

by John McCullough

**Show & Tell**

There were no pre-business meeting presentations made. A discussion of the proposed 2015 budget was held by the Budget Committee.

**Call to Order**

Rich Richins, President, Astronomical Society of Las Cruces (ASLC, the Society), called the August business meeting to order at 7:36 pm, 22 August 2014, Room 141, Doña Ana Community College (DACC), Las Cruces, New Mexico.

**President's Comments**

The President, Rich Richins, welcomed the group to tonight's meeting. Rich noted that the previously scheduled speaker had to cancel because of a family emergency but he was pleased to welcome Ms. Joni Clark who has agreed to speak to the Society tonight.

**Officer's Reports**

**Secretary's Report**

Rich Richins reported the minutes for the July meeting had been submitted by the Secretary, John McCullough, for publication in the August issue of the Society newsletter, the *High Desert Observer* (HDO). If there were no corrections or discussion, Rich asked that the minutes be accepted as submitted. Ron Kramer moved that the minutes be accepted as published, Bob Armstrong seconded and the motion passed by acclamation. There was not an additional Secretary's report.

**Treasurer's Report**

The Treasurer, Trish Conley, provided a status of the Society's various accounts. She also reported that a \$50 payment had been made to the International Dark Sky Association (IDA). There was not an additional Treasurer's report.

**Committee Reports**

**Outreach**

Chuck Sterling, program coordinator, reported there was a MoonGaze at International Delights Café (IDC) on 02 August. There will be additional MoonGazes on 30 August and 06 September. A Dark Sky Observing (DSO) session is planned at the Upham site on 23 August. Future events include a star party at Valley View Elementary School on 06 November and a possible event at Desert Hills Elementary. Renaissance Arts Faire 2014 will be 01 02 November at Young Park. "Music & the Stars" will be 13 September at Leasburg Dam State Park (LDSP). Other members mentioned events including Okie-Tex Star Party, 20 - 28 September at Camp Billy Joe, OK; Star Quest (part of the Enchanted Skies Star Party at the VLA and NM Tech) 24 - 27 September; and the Tucson Equipment Forum 01 - 02 November.

**Apparel**

Ron Kramer, acting Chairman, has one hoodie remaining. He is taking orders for additional items with the Society logo in various sizes. Items may be purchased following the meeting.

**Membership**

Judy Kile, Committee Chair, had no new members to report.

**ALCon 2015**

Ron Kramer, Committee Chairman, reported that planning for the convention is on track. Twelve (12) of twenty-two (22) speakers have been confirmed. Formal dates of ALCon are 08 - 11 July 2015 at the Hotel Encanto. Joel Levine, 40+ years at NASA, currently teaches at Virginia, will be the keynote banquet speaker. Ron needs

members to volunteer to insure "presence" of the Society. He expects the Society to receive \$2500 - \$3500 from the convention.

### **Officer Nominations**

Chuck Sterling, Committee Chairman, reported that a candidate for President is still needed to fill out the slate of candidates. The candidates will be presented at the September meeting with ballots to follow.

### **2015 Budget**

Rich Richins reported that the proposed 2015 budget will be published in the September issue of the HDO for approval of the membership at the September meeting.

### **Old Business**

#### **Kitt Peak Excursion**

Rich Richins recapped the observing opportunity offer from George Hatfield. The planned date is 18 October and the total package cost will be \$107. George has offered to work on the cost if that amount restricts participation. Four (4) people present indicated that they were interested in participating.

Steve Barkes moved to adjourn the business portion of tonight's meeting, Ron Kramer seconded. The business meeting concluded at 8:05 pm.

### **Presentation**

This month's presentation was by Joni Clark, a physics student at New Mexico State University, on *The Search for Life: Astro-Biology - An Introduction*. Joni covered a broad range of topics; general Habitable Zone (HZ) criteria, specific HZ "requirements" for life, Drake's equation, Zoo/Self-Destruct Hypothesis, and wrapped up with her specific research into habitability in binary systems (which is her primary research focus).

The August meeting of the Astronomical Society of Las Cruces concluded at 9:00 pm.

-Respectfully submitted by John McCullough, ASLC Secretary

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### **Back at the Telescope**

by Berton Stevens

With the forty-fifth anniversary of the Apollo Moon landing just past, perhaps it is time to recall the contributions of amateur astronomers to the space program in the 1950s and 1960s. While there were (and are) certainly amateur astronomers working for NASA during this period, these are the direct contributions from amateurs volunteering their time to contribute to the space program.

The first big contribution started even before the first satellite was launched into orbit. After Germany's development of the V-2 rocket in World War II and the continued development of ballistic missiles by the United States and the Soviet Union, it was clear that Earth-orbiting satellites were just a few years away. The Smithsonian Astrophysical Observatory's (SAO) Fred Whipple came up with Project Moonwatch to track these satellites.

Moonwatch had people with small telescopes set up in a north-south line. At the center of the line was tall pole. All the telescopes were pointed at the top of the pole. This meant that those closest to the pole were looking high in the sky, while those further away were looking at a lower altitude. When a satellite would be seen in one of the telescopes, the observer would call out when the satellite passed the tall pole visible in their telescope. Using trigonometry, the altitude they were looking at could be computed. This, along with the latitude and longitude of the tall pole and the time of observation provided an accurate data point for computing the orbit of the satellite.

Moonwatch stations were established all over the world and the data was reported to the SAO. They used an IBM 704 computer at the M.I.T. Computation Center to compute the orbit. The first "satisfactory orbit" was computed for the brighter Sputnik 1 booster at 7:00 a.m. on October 11, 1957, just seven days after the launch of Sputnik 1. Thousands of people from all walks of life contributed to Project Moonwatch, including many amateur astronomers.

In 1958, the first of the 20-inch aperture Baker-Nunn tracking cameras came online. These 3.5-ton instruments were mounted on multi-axis mounts taking images on 55 mm Cinemascope film. They could image Earth satellites more accurately and reach fainter magnitudes than Project Moonwatch. Once the Baker-Nunn camera network was completed, Project Moonwatch was disbanded.

Even now, amateur satellite trackers using modern equipment and techniques track Earth orbiting satellites and compute orbital elements for these satellites. This is especially useful for tracking top secret payloads for which NORAD does not release elements.

But this was not the end of the amateur involvement in the Moon landing. Amateur astronomers were just starting to observe lunar occultations of stars and a growing cadre of amateurs were becoming interested in observing these events. There are two types of lunar occultations, total and grazing. Total occultations have the star disappear or reappear on the limb of the Moon. These observations could be made from any observatory as long as the observatory's latitude and longitude were precisely known and the event was timed against an accurate time source, such as the National Bureau of Standards (as they were called at the time) shortwave radio station WWV.



*This Project Moonwatch team in Terre Haute, Indiana, is watching for a satellite to appear in one of their telescope. These teams were formed all over the world. Edmund Scientific sold the standard "Moonwatch telescope" that pointed downward into a mirror to reduce neck strain and fatigue for the observer while they watched for a satellite to traverse their field of view.*



*The bright star Spica (upper left) is about to disappear in a near grazing occultation in the Moon's north polar region on November 30, 1994. Occultation observations helped refine the lunar orbit before spacecraft ever reached the Moon.*

The other type of lunar occultation is the grazing lunar occultation. In this type of event, the star skims the Moon's northern or southern edge, disappearing behind the mountains and flashing out in the valleys along the edge. To observe these events, you had to be in just the right place on the surface of the Earth. Astronomical societies would build "graze cables;" two miles of cable which would be set up across the location where the graze would occur. There would be a connector every five hundred feet and an observer would set up their telescope near the connector and plug in their push-button to the cable connector.

The observer would watch the star and would push the button when the star disappeared and release it when it reappeared. This would activate a pen on a chart recorder at the central station of the cable. This would generate

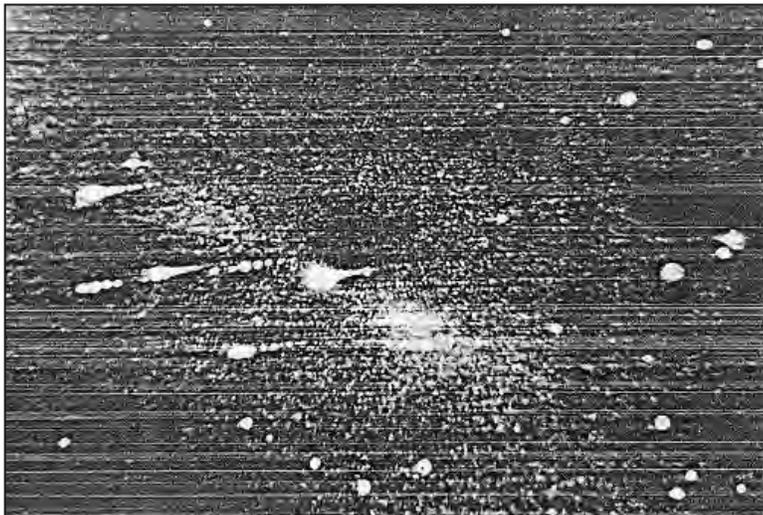
a graph on the chart recorder of that edge of the Moon and the time the various events were recorded could be read off the chart. Along with precise measurements of the latitude and longitude of each station, the north-south position of the Moon could be precisely computed.

These two types of occultation measurements were complementary: total occultations were better at measuring the east-west displacement of the Moon, while grazes were more sensitive to north-south displacements. Both sets of observations, combined with careful observations of the lunar limb profile by C.B. Watts allowed the Moon's orbit to be refined before the Apollo lunar missions began. The amateurs who made these observations eventually formed the International Occultation Timing Association to support continued efforts to use occultations to improve our knowledge of our Solar System.

One final amateur contribution came after the lunar flights began. Amateurs were enlisted to use their larger telescopes to track the Apollo spacecraft on their way to and from the Moon. While it took larger telescopes to see the spacecraft most of the time, when there was a water dump, the area around the spacecraft was surrounded by a comet-like coma that increased its brightness by several magnitudes.



*Frank Younger and Ernie Pfannenschmidt took this image of Apollo 13 en route to the Moon using the 0.4m telescope on Mount Kobau in British Columbia. The explosion that terminated the lunar landing had occurred a little earlier and the escaping oxygen formed this cloud. The cloud is approximately 37 second-of-arc across, corresponding to about 36 miles across.*



*This image is from the image orthicon system on the 24-inch reflector at Corralitos Observatory. Apollo 14 is in the process of performing a water dump. This image shows not only the moving spacecraft stack, but the four SLA panels that protected the lunar module and the S-IVB the powered the spacecraft toward the Moon.*

These observations were not used for real-time tracking, since most were on photographic film that had to be developed and then analyzed. A few of the observatories were using video systems, including Corralitos Observatory located a little west of Las Cruces. The observations were collected by the Max Planck Institute for Astrophysics and analyzed to study the formation in space of grains from the dumps.

While the astronauts got to walk on the Moon's surface, amateur astronomers were able to be part of the lunar missions by making observations with their equipment. It was not as exciting as traveling in space, but it still provided a sense of contributing to our exploration of space.

\* \* \*

On the next page is the *proposed* FY 2014/2015 ASLC budget. The budget will be voted on at the September regular meeting, in keeping with the Society's Bylaws. Please review the numbers carefully and report to the Treasurer if you have any questions, comments or concerns.

**ASLC Proposed Budget FY 2014-15 (October 1, 2014 - September 30, 2015)**

	<b>Final 13-14 Budget</b>	<b>FY 2014-15 Budget</b>
<b>OPENING BALANCES</b>		
Checking	\$ 3,375.32	\$ 3,300.00
Saving	\$ 1,391.56	\$ 1,393.60
Money Market	\$ 9,761.39	\$ 9,710.00
Petty Cash	\$ 84.00	\$ 84.00
CD	\$ 6,050.72	\$ 6,070.00
<b>Sub-Total</b>	<b>\$ 20,662.99</b>	<b>\$ 20,557.60</b>
<b>INCOME</b>		
Apparel	\$ 210.00	\$ 450.00
Books & Calendars	\$ 337.00	\$ 350.00
Donations (incl. Photos)	\$ 2,240.00	\$ 250.00
Grants	\$ 3,397.51	\$ -
HDO	\$ -	\$ -
Membership Dues	\$ 1,846.00	\$ 1,700.00
Sale of Society Equipment	\$ 40.00	\$ 200.00
Telescope Loaner Programs	\$ 40.00	\$ -
Annual Dinner Meeting	\$ -	\$ -
<b>Sub-Total</b>	<b>\$ 8,110.51</b>	<b>\$ 2,950.00</b>
<b>EXPENSES</b>		
Apparel	\$ -	\$ 450.00
Books & Calendars	\$ 331.88	\$ 350.00
Astro. League Memberships	\$ 310.00	\$ 350.00
Discretionary Funds	\$ 200.00	\$ 200.00
Donations	\$ 100.00	\$ 50.00
Guest Speaker Dinner	\$ -	\$ 50.00
HDO (mail)	\$ 18.72	\$ -
Annual Dinner Meeting	\$ 313.48	\$ 350.00
IDA Membership	\$ 50.00	\$ 50.00
Insurance	\$ 1,413.29	\$ 1,082.00
Leasburg Observatory	\$ 2,243.43	\$ 200.00
Loaner Telescope Program	\$ -	
Telescope Maintenance	\$ 100.00	\$ 75.00
Photos for Events	\$ 100.00	
PO Box	\$ 76.00	\$ 78.00
Publicity/Outreach	\$ 163.12	\$ 400.00
Safe Deposit Box	\$ 37.65	\$ 37.65
Tax Related Issues	\$ 118.95	\$ 50.00
Website	\$ 14.99	\$ -
Tombaugh Observatory	\$ -	
Office expense	\$ 79.52	\$ 30.00
<b>Sub-Total</b>	<b>\$ 5,671.03</b>	<b>\$ 3,802.65</b>
<b>SURPLUS/DEFICIT</b>		
Total Income	\$ 8,110.51	\$ 2,950.00
Total Expenses	\$ 5,671.03	\$ 3,802.65
<b>Sub-Total</b>	<b>\$2,439.48</b>	<b>\$ (852.65)</b>
<b>CLOSING BALANCE</b>		
Checking	\$ 3,375.32	\$ 3,300.00
Saving	\$ 1,391.56	\$ 1,393.60
Money Market	\$ 9,761.39	\$ 9,500.00
Petty Cash	\$ 84.00	\$ 84.00
CD	\$ 6,050.72	\$ 6,070.00
<b>Sub-Total</b>	<b>\$ 20,662.99</b>	<b>\$ 20,347.60</b>