



# The Water Garden

Volume 19 / Number 3

May/June 2002

## May 19<sup>th</sup> Meeting

### ***Tropical Waterlilies – For the novice water gardener***

Stan Skinger will present a program on growing tropical lilies at our 2 p.m., May 19 meeting to be held at the DBG Waring House. This is located on the south end of the DBG grounds at 8<sup>th</sup> Ave. and York St.

Tropical lilies provide a compliment to the pond by providing non-stop blooming into late fall. Tropicals provide beauty for more than a month after hardies have had their show. Learn how to plant tropical lilies, how to maintain them during the season and propagate for the following year.

Stan maintained the Denver Botanic Gardens tropical lily collection as a volunteer for a number of years. The expertise he will share will dispel the myth that tropical lilies are difficult to grow. Stan says everyone can be successful with just with a little knowledge. Come learn.

## June 2, 2002

### ***CWGS Annual Plant Sale***

Don't miss the 2002 Plant Sale on June 2, 9:30 a.m. opening for CWGS members. Sale location is at the DBG Morrison Center, 11<sup>th</sup> and York St. Each year we have the largest selection of aquatic plants and lilies available anywhere offered at one location. Most aquatic plants will again be priced at 3 for \$18, mature lilies at \$25 each. Fish and critters, pots, fish food and fertilizer will also be sold.

Each year we try to bring in newly introduced plants to the market as part of our tropical and hardy plants, lilies, floating leaf plants, floating plants and submerged plants. We also will have a notation on plants that grow well in our area. Always a favorite area for shoppers is our member donation sale area with all items at great bargain prices.

As you do spring cleaning of your ponds don't forget to set those extra plants aside to bring for the sale. Donations for the sale will be accepted Saturday, June 1, from 10 a.m. until 3 p.m. at the Morrison Center.

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#### *July Pond Tour & Picnic*

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## **The Water Garden**

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With the on and off arrival of spring, many pond owners are surveying their ponds only to find a variety of problems. Algae is the most prevalent problem that I have received calls for help to control. The warming sun combined with excess nutrients is providing the "food" for algae. You can have the greatest filtration system available and still have algae, the product is not defective, nor is the installation necessarily the problem. Rather it is Mother Nature. She provides the wind that blows the leaves that float in to the pond. She is the one who breathes frost in the air in the fall that kills the growth that sinks down into the pond and begins decomposition. It is nature that poses the challenge to us.

Anyone expecting to have a crystal clear sparkling pond may as well stick to a hot tub or swimming pool. Remember these also require care. To the opposite end these require the addition of chlorinating chemicals, stabilizing products and filters to be clear. The intent of these is to be recreational facilities for humans, void of bacteria, indeed a totally artificial creation.

A pond is a separate eco-system. It can become imbalanced from too much sun, too much rain, too many fish, and too much decaying debris. All these are products from Mother Nature. We on the other hand often contribute to imbalance by feeding fish too much, putting in too much fertilizer to boost plant growth, or failing to dechlorinate large amounts of water added to the pond.

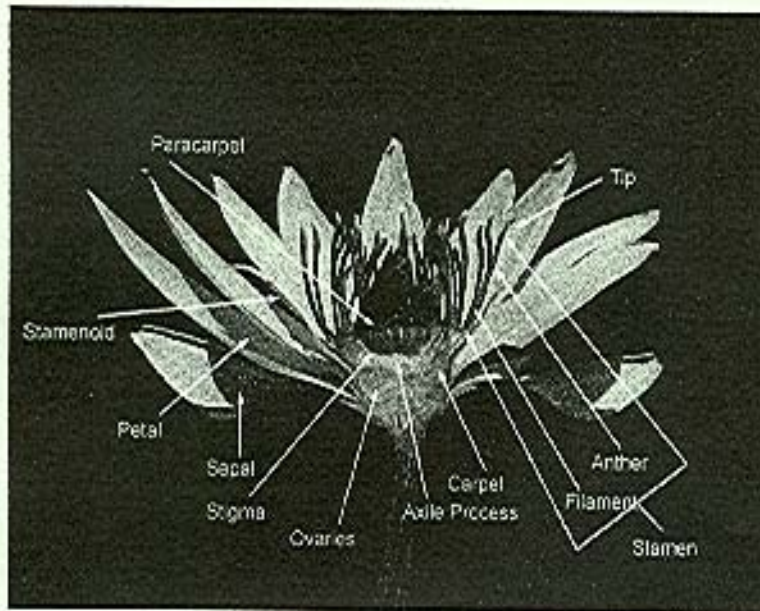
There are no "instant" cures for the spring green. There is no need to go out and buy any big-ticket items to be installed such as skimmers, U-V filters and huge biofilters. This phenomenon occurs despite the most extravagant products available today. Instead remove any decaying debris in the bottom of the pond, do a 25% water change and let the fish eat the filamentous algae and delay feeding until it come into control. If you have suspended solids (silt) in the water you can use a bucket with a hole cut for an outlet near the bottom and place fiber fill in the bucket and pump water into the bucket. The water is filtered as it goes through the fill material, then returns to the pond clear of dirt and other small particles that make water murky. This is known as the "Mirgon" filter. John Mirgon, founder of CWGS has shared his method many times over with our members.

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## Make Your Own New Cultivar!

By Kit Knotts, Cocoa Beach Florida

Part of the fun of growing waterlilies can be doing a little hybridizing yourself! It's really pretty simple and might just produce a wonderful new cultivar that you can name and register. It requires some basic knowledge of the structure of the flower, a minimum of equipment and the time to observe your flowers.



We began hybridizing with *Victoria* but our interest soon expanded to waterlilies. We were inspired, encouraged and instructed by the legendary Bill Frase of Orlando FL. The method we will describe is the traditional one, though alternative approaches are used by Rich Sacher in New Orleans LA (nicknamed by us the King Bee) and others.

The first step in creating a new hybrid is to decide what you want to make. Some (like us) have specific goals in mind and limit the number of crosses attempted to those we think might yield the desired result. Others (like Rich) make lots of crosses, enjoying all the results, especially the greater opportunity for something spectacular. You are likely to decide on crosses that suit your particular growing conditions and tastes. Someone with a small pond should think about compact parents where one with lots of space can think big.

It is generally accepted that hybrids between members of the different subgenera within the waterlily genus *Nymphaea* cannot be made. Our attempts certainly have been unsuccessful, though we will never say never. The subgenera are *Brachyceras*, most of the day blooming tropicals; *Lotos*, most of the tropical night bloomers; *Nymphaea*, all of the hardies; *Hydrocallis*, night blooming tropicals rarely found in cultivation; *Aneuphya*, day blooming tropicals from Australia and the East Indies.

We love tropical lilies (which also love us), large ones and those that are very cold tolerant, especially those that are both. This has led us to concentrate on the big, beautiful and very tough offspring of *N. ampla*. Our *ampla* was a gift from Bill Frase and the same as he used in creating 'Floyd Wolfarth', 'Bill Yohn' and 'Lou Pignolet'. Our examples are from this type of *Brachyceras*. *Ampla* itself is not especially large, has a simple white flower with interestingly ranked stamens and bronze pads that look more like night bloomer pads than the usual day bloomers. *Ampla* is a great parent, not only setting seed easily but also stamping itself on progeny with large flowers, a leathery quality to pads and cold tolerance.

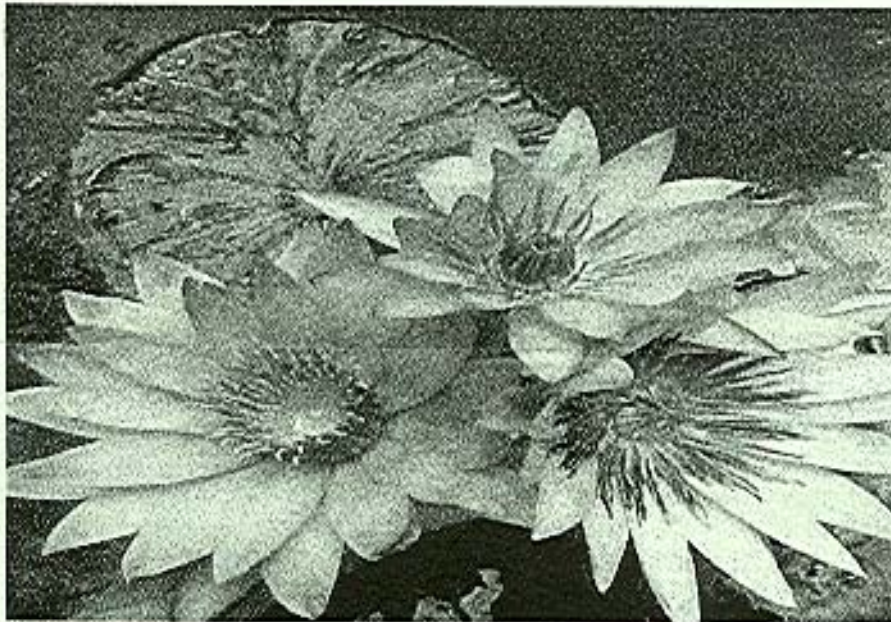
It should be mentioned at this point that, here in Florida or in greenhouses, breeding can take place almost year round. This is less and less the case the farther north you go, with the breeding season limited to early fall in outdoor ponds. Viability of both male (pollen) and female (stigma) flower parts is greatly affected by weather. Certain ones can also just be persnickety, producing viable pollen or setting seed only at certain times.

Some of the terminology of hybridizing used offhandedly and interchangeably can also be confusing! Some of the terms that refer to Mom are pod parent, seed parent and female parts such as stigma and stigmatic cup. Dad is known as pollen parent and his male parts are stamens, a part of which is the anther (the pollen bearing portion of the stamen).

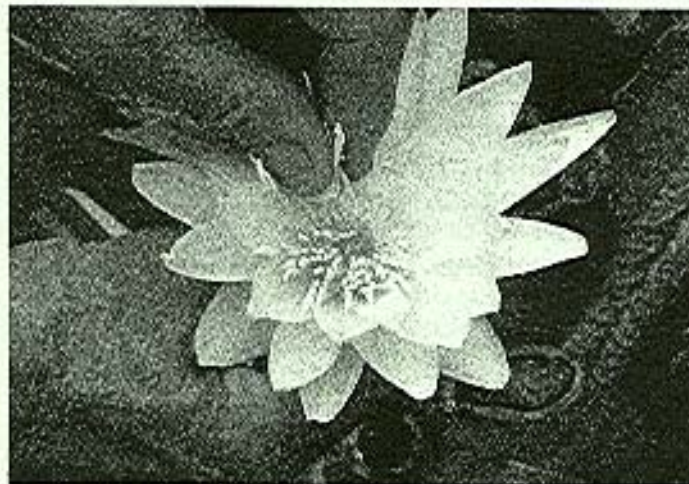
The "Code" (ICNCP) allows for listing parents alphabetically when expressing crosses but it also permits giving the pod parent first and the pollen parent second, the method we prefer and always use. An example would be *N. ampla* (Mom) x *N. 'Indian Goddess'* (Dad) = *N. 'Bill Frase'*. The name of the hybridizer sometimes follows the cultivar name.

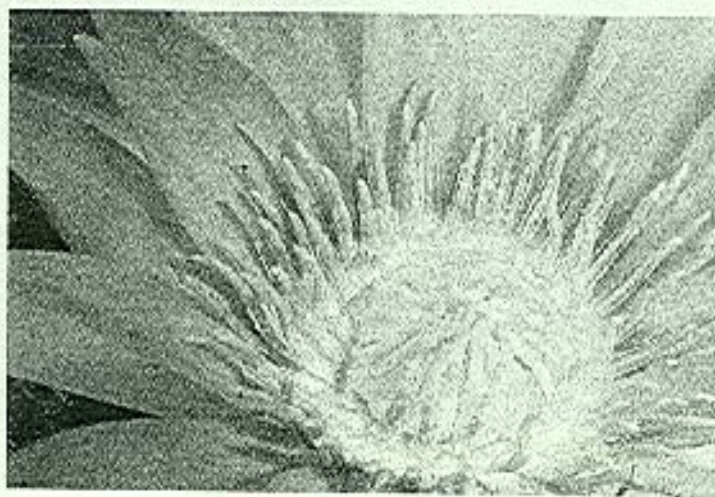
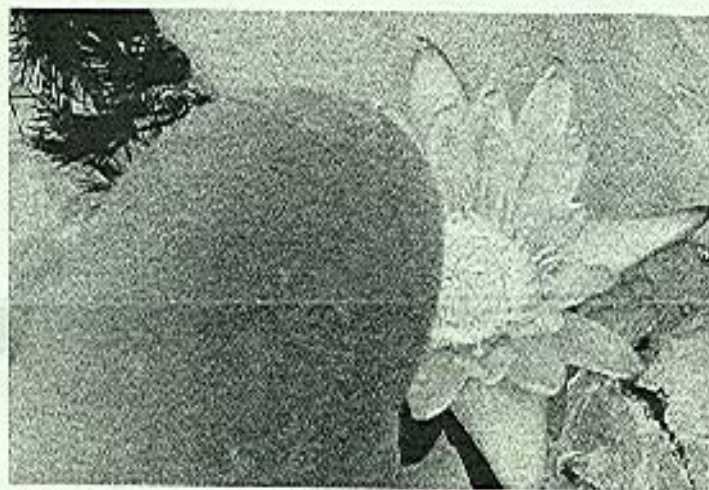
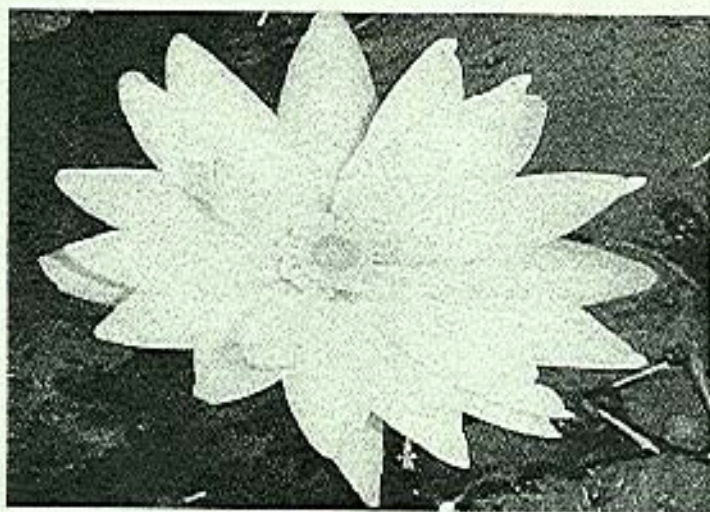
## The Pollination Process

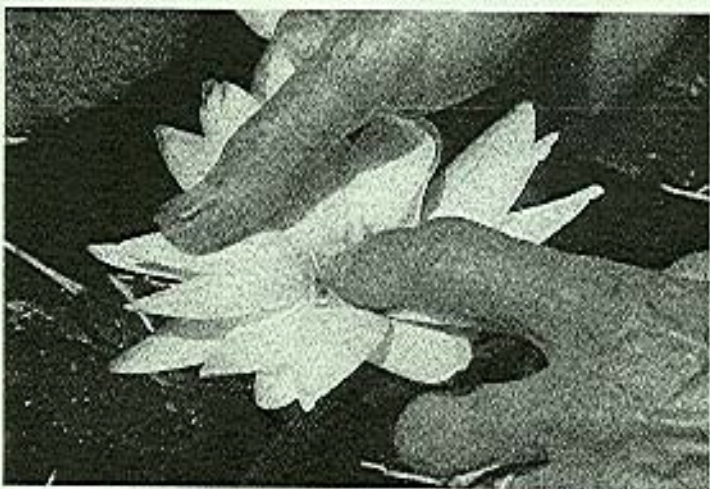
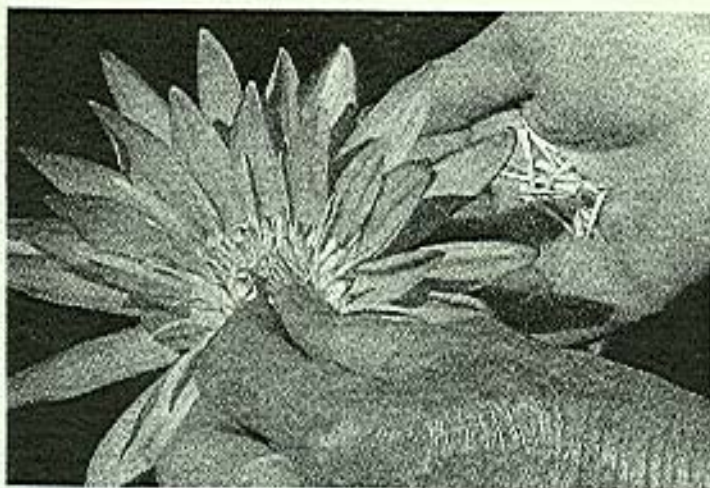
In the first day tropical flower, the stamens stand straight up and there is fluid in the stigmatic cup, also known as nectar. It's this new flower that is the most receptive to breeding, even though it's own anthers (the part that contains the pollen bed) rarely produce pollen on the first day. The second day, the outer stamens lean outward and produce some pollen. The third day, the middle rank of stamens flare outward with the inner stamens sometimes leaning inward. All produce LOTS of pollen, even though the stigma is less receptive as the days pass.

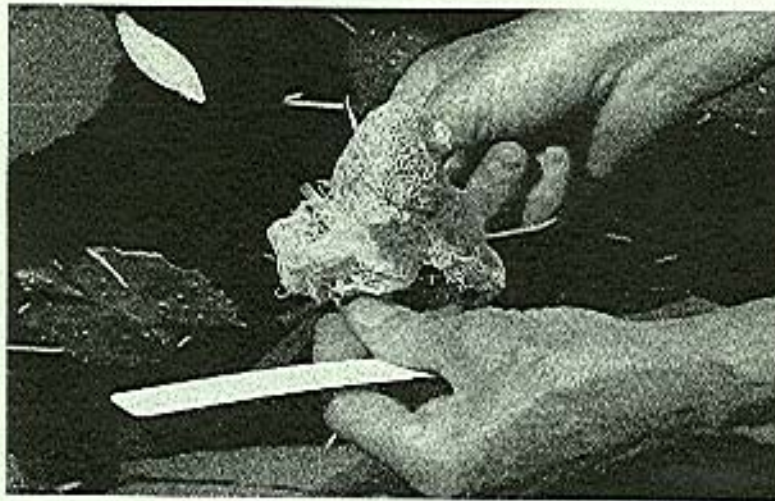


Maybe add hardy, *Anechya* and night bloomer stamen behavior









We select a first day flower to be the mother and emasculate it so that its own pollen doesn't affect our cross. This means removing the stamens completely by plucking them with fingers, tweezers or scissors. This should be as close to the stigma as possible without damaging it so that we are sure the anther portion of the stamen is removed. No pieces should be left in the stigma or nestled in the petals because the pollen can, in rare cases, continue to develop from the cut first day anther and corrupt the cross. Some hybridizers emasculate the day BEFORE first opening.

If we have been smart we have already gone looking for a second or third day flower to be pollen donor. Sometimes both second and third day flowers are open on the same plant so we harvest from both. We check for pollen if it's not visible by rolling a few stamens between thumb and finger, hoping to see it on the fingertip and feel the distinctive "talcum powder" texture. Anthers are plucked with fingers, tweezers or scissors and can be placed in a little container though the palm of the hand serves for us. In some flowers the anthers are lower on the total stamen assembly than in others so we have to be careful to get the right part!

Returning to the prepared prospective pod parent, we drop the anthers into the stigma and poke them well into the nectar. Pollen can be extracted from the donor anthers or tips can be removed to increase pollen concentration, possibly improving seed set, but this is time consuming and we skip the step. We close the flower, cover it with cheesecloth, secure it with a rubber band and tag the stem with the cross information. Old pantyhose also make a great cover.

Once in the stigma, individual grains of pollen germinate making a tube. The pollen tube makes its way down through the stigmatic surface to an individual ovule within the ovaries and allows the ovule to be fertilized. It is then an infant seed.

## Happy Accidents

There are times that Mother Nature takes care of the process for us. Self-pollination occurs easily in some plants. Bees and other insects can introduce pollen from other flowers for natural cross-pollination. A wonderful example of this is the results from several huge pods on 'Enid Frase' Frase ('Castali Flora' x 'Orchid Star'), an electric medium pink, just too nice not to bag and collect. Though we had nothing to do with the process, we get to take credit for the resulting "chance seedlings". Many of the nicest cultivars offered in the trade were originally chance seedlings.

From those volunteer pods, there are some nice pinks, likely self-pollinations of Enid including 'Cherry Bombe', a deep cherry red, the pollen parent in our illustrations. Also in the batch are some nice medium blues, probably the result of cross-pollination with the plant adjacent to Enid, 'Laura Frase' Frase ('Blue Beauty' x 'Panama Pacific'); a lovely delphinium blue.

Letting flowers "self" or be crossed incidentally can yield wonderful surprise packages. The only drawback is that the parentage can only be guessed. As in the example above, selfs and crosses can occur in the same pod unless the selfed flower is closed and covered to prevent accidental crossing.

## The Pod







Now we watch and wait. Within a week or so, the stem of a fertilized pod will develop a distinct "crook" in its neck, setting the pod face up. It will sink to the bottom while it develops. Maturation can take as little as 15 days and as much as eight weeks, dependent mainly on water temperatures. The pod will swell markedly. Unset pods will soon rot off, often part way along the stem.

Once the pod has sunk well down into the water we remove the cheesecloth and place a plastic bag perforated with tiny holes around it, sealing it loosely around the stem. The holes allow for some exchange of gasses but won't let any seeds escape. Near maturity, removing the bag briefly to remove rotting petals and sepals carefully will result in less debris mixed with the seeds. When the pod ruptures, seeds and often the whole carpel assembly will float to the surface if not bagged or up into the bag which comes briefly to the surface. We collect the bag and dump the contents into a small bucket, rinsing the bag several times to be sure we have removed all the seeds.

The tiny white, tan or light gray seeds have not been fertilized and are not viable. Small reddish or purplish seeds are immature and not viable. Larger dark seeds, which can be black, gray, brown or green, sometimes within the same pod, ARE viable. In the first day or two after collection, these will float by means of a thin gelatinous coating called an aril. Soon the aril rots off and the good seeds sink to the bottom of the container. The debris can then be "decanted" by swirling and pouring off the water several times, stopping short of pouring out the heavier viable seeds. A fine strainer can be helpful here to prevent accidental loss of seeds.

It is possible for pods to remain on the plant to full term, rupture normally and not contain viable seeds. Sometimes this is seasonal and sometimes it can be that the pod parent is essentially sterile. Some plants that are sterile as female parents make viable pollen so can act as Dads.





At this point, seeds can be planted or dried for storage. Once thoroughly dry they can be kept for years in the refrigerator. If we plan to plant them, we try to do it before they sprout in water since the tiny first leaf makes them slightly buoyant and hard to anchor in soil. We plant each of the different crosses in individual containers, size depending on the number of seeds. This container is often a dishpan with a few inches of soil in the bottom, filled with water. We distribute the seeds, which hopefully will sink to the soil, and dribble a thin layer of white sand over them. Care must be taken when adding water not to dislodge the seeds or seedlings.

When the seedlings make floating leaves, they can be potted individually and fertilized lightly. The wait for the first bloom can be agony since it just might be your very own spectacular new cultivar!

Special to The Water Garden, this article was originally published in **Pond & Garden Magazine**, June 2001. The author, Kit Knotts, is a freelance writer, an accomplished horse show woman and trainer of Lipizzan horses in Dressage disciplines, and water lily hybridizer residing in Cocoa Beach, Florida. You can learn more about her and her husband, Dr. Ben Knotts, and see their amazing "Paradise" at her website:  
<http://www.victoria-adventure.org>

### **COMING WATER GARDEN EVENTS:**

#### **DBG Plant Sale**

Friday and Saturday May 10<sup>th</sup> and 11<sup>th</sup>.

Call Millie Russell at (303) 443-7877 if you would like to help set-up on the 9<sup>th</sup> or work the sale the 10<sup>th</sup> or 11<sup>th</sup>.

#### **Rocky Mountain KOI Club: KOI Auction**

**Saturday May 18<sup>th</sup> at Hudson Gardens**

Check-in at 9:00 AM on the auction for dry goods at 10:00 AM and fish at 11:00 AM.

#### **CWGS Plant Sale: Saturday June 2, 2002.**

Doors open to members at 9:30 AM and general public at 10:00 AM. If you would like to help set-up on Friday or work the sale on Saturday please contact Bob Hoffman at 303-978-0124