

MAMMILLARIA THORNERI

Espinas y Flores

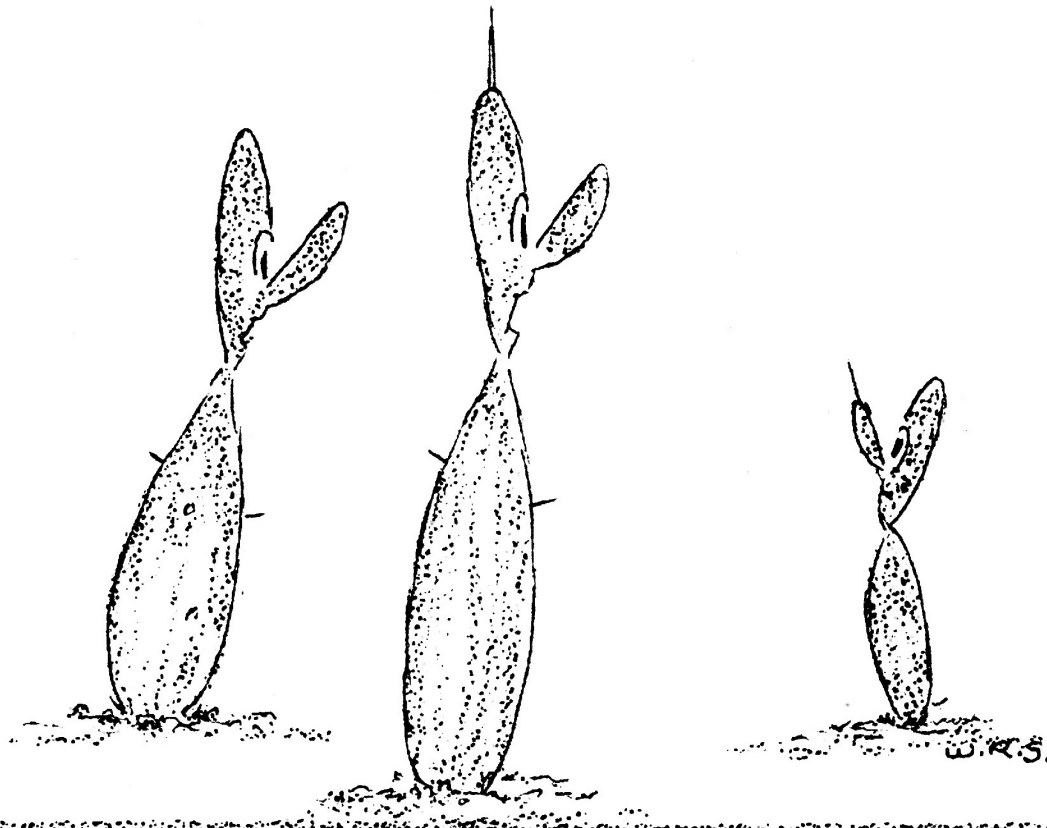
BULLETIN OF THE SAN DIEGO CACTUS AND SUCCULENT SOCIETY
Affiliate of the Cactus and Succulent Society of America, Inc.

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TOMO NUEVE, NUMERO ONCE
.....

NOVIEMBRE 1974
.....

Junior is growing his first spine....but is that where it ought to be ?

Not exactly, but you must remember . . kids think they gotta be different!



F I R S T S P I N E

Vice President and Program Chairman MARTIN L. MOONEY says: "The November program will be a "REVELATION OF FAVORITE PLANTS, PARTICULARLY THOSE IN MY OWN BACK YARD." He will be assisted by a number of favorites. (Nov. 9, 1:30 p.m.)

L A S T R O L L C A L L

LIFE is the enigma and wonder of our earth, be it of plants or men, and its time span affords for the fulfillment of a meaningful association and relationship between the two.

William C. LOCKWOOD of 2841 Las Lunas Street, Pasadena, CA passed away on October 15th in Pasadena after a lingering illness which impaired his physical activities but not his people-plant contacts.

He was an acknowledged and respected leader and organizer, and he promoted many club activities throughout the state. He was President of the Cactus & Succulent Society of America in the current year and his reelection was assured. Bill was a member of many Societies throughout California and he participated actively regardless of area, distance or time.

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Fred HEYWOOD of 745 West Oak Drive, Glendale, Missouri, answered to life's last roll call on October 17th. He was the husband of Anita M. Heywood, widely known succulent plant enthusiast. Fred participated indirectly in plant culture by assisting and encouraging Anita's culture methods and techniques.

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I N T H I S I S S U E---November 1974

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The Club and all members present in October thank the following nine members for a delightful regalement at the intermission of the October meeting:

- | | | |
|----------------|------------------|----------------|
| Alice BISHOP | Virginia DUCKNER | Evelyn CHATHAM |
| Jean HAPEMAN | Leta HAPEMAN | Lena RICE |
| Dorothy RONSKI | Hazel SCOTT | |

C A C T U S - O F - T H E - M O N T H

M A M M I L L A R I A

Dr. George E RADWIN

Every cactus fancier knows the genus Mammillaria and unless he is infected with "cactophilia" in the southwestern United States with its barrel cacti, chollas and saguaros, the first plants he is able to acquire are usually members of the large and diverse genus Mammillaria, so named by reason of its multitude of small to large nipple-like tubercles.

Mammillaria is by far the largest cactus genus in terms of number of species. Although Britton and Rose treated only 150 species in the early 20's, today there are more than 300 species known, the precise number depends on how carefully one defines the species----splitters vs. lumpers again. (Backeberg lists 367 species)

The magnitude of the group and the need to better understand interspecific relationships has led to the assignment of each species to one of ten "series" or "species groups". In so doing species with several characteristics in common can be grouped without recourse to forming new, full-fledged generic names. Other less cautious workers have introduced several subgenera whose validity depends on the person to whom one speaks. Among these are Dolicothele (including Mammillaria baumii, M. surculosa), Phellosperma (including Mammillaria macrancistra*) and Krainzia (Mammillaria longiflora) * "micran" ?

In form Mammillaria may be globular to cylindrical and may be either caespitose (offset-forming) or non-caespitose. Spines may be either hooked or unhooked (straight) and arise from areoles at the tips of the tubercles. Blooms are axillary, arising from between the tubercles. Blooms may range in color from uniform bright red through violets and pinks into cream with red, pink or yellow longitudinal stripes. Others have white, cream or yellow blooms. Blooms range in size from tiny to some of the (proportionately) largest in the Cactaceae (e.g. M. goldii and M. theresae). When blooms wither they are either retracted into the plant body or they dry and drop off. After a variable period of time the fruit protrudes from the plant body. This fruit is generally sausage-shaped and may range in color from bright red or orange to yellowish or white.

One group of Mammillarias is characterized by producing a white, sticky substance, commonly called "latex", that is produced at wound sites. The other group does not produce this substance.

Culturally, Mammillarias are too diverse to generalize about. Many may be grown successfully out of doors in San Diego but few are frost resistant. Their greatest weakness appears to be their **intolerance** of excessive moisture in cool weather.

The distribution of Mammillaria species includes the southwestern U. S. (Calif., Ariz., N. M., Texas) through Mexico which is the homeland of the vast majority of species. A few are known from Central America. One species comes from the Caribbean Islands (M. nivosa) and one from South America (M. columbiana).

Some of the more commonly available Mammillaria species are:

<u>M. bocasana</u>	<u>M. dioica</u>	<u>M. hahniana</u>	<u>M. nivosa</u>
<u>M. camptotricha</u>	<u>M. dolichocentra</u>	<u>M. melanocentra</u>	<u>M. parkinsonii</u>
<u>M. candida</u>	<u>M. elongata</u>	<u>M. microhelia</u>	<u>M. rhodantha</u>
<u>M. compressa</u>	<u>M. fragilis</u>	<u>M. neopotosina</u>	<u>M. spinosissima</u>
<u>M. dealbata</u>	<u>M. genispina</u>		

FILL A VACANT SPACE WITH AN ALOE

An Aloe Assortment

James LaMaster CALIFORNIA GARDEN

DO YOU NEED A PLANT for a small or large pot or a garden spot? If you have such a vacant area, perhaps you would do well to select a specimen from the genus Aloe. More than 200 species are known to exist. These species range in height from three or four inches to thirty or forty feet, and the circumference of each plant is most usually in a balanced perspective to the height of that particular plant. However, the latter is not true of those species which are sometimes classified as "creepers" or "climbers" which maneuver up, down, over and around whatever may be in their paths.

My favorite "creeper" is Aloe ciliaris which I have known to have stems as long as fifteen feet. This species has a stem about the thickness of one's little finger with alternating pairs of leaves about three inches long. The blossoms are primarily yellow with a red tip that blushes up into the yellow. A. ciliaris usually has flower spikes coming into bloom, in full blossom and going out of bloom all at the same time.

The Aloe thraskii in the garden of Katie McReynolds of Del Mar, California is approximately four and one-half feet tall, not including the bloomstalk. The circumference of this specimen is nearly seven feet. Aloe thraskii is one of "erect stem" types in which the inflorescence is similar to a candelabra having four to eight spikes. Aloe ferox and Aloe candelabrum are the more familiar species in the erect stem group. A well-known specimen of this group may have a stem surpassing ten feet in height. Aloe marlothii, also of this group, is distinctively different because of the grayish leaves that are extremely spiny on both sides and the different inflorescence. A fully grown specimen of A. marlothii can have more than fifty orange flower-spiked that extend backward horizontally.

Two similar, yet different species are Aloe distans and Aloe nobilis. These both have dark green, spiny leaves and orangy colored blossoms. They have rosettes almost equal in circumference. The main difference between these species is that the rosettes of A. nobilis are almost stemless in appearance because of the many suckers that emerge from the base of the mother plant. On the other hand, A. distans is a procumbent species with wider spaced pairs of alternating leaves. Stems may be from two to five feet long and extend in various directions from the root area.

Aloes will grow in practically any soil or any location, but the location and soil can change the outward appearance of the plants as to floriferousness and coloring of leaves. In order to thrive, aloes should have a rich, porous soil in a full-sun location. If rich, well-drained soil is provided, aloes can be watered without fear of causing rot. With a small selection of different aloes, rich soil, good drainage and a sunny spot in the garden or patio, one can have aloes blooming all year in southern California.

Aloes are good plants to select for added garden interest and topics of conversation to those persons who occasionally visit a garden. They were grown as potted plants by the Romans, are mentioned in the Bible (Proverbs) and are said to have been known by the Greeks as early as 4 B.C.

The pulp from these plants--especially Aloe vera--is famous for medicinal uses. The pulp is most commonly used for skin irritations, but is said to be a curative also.

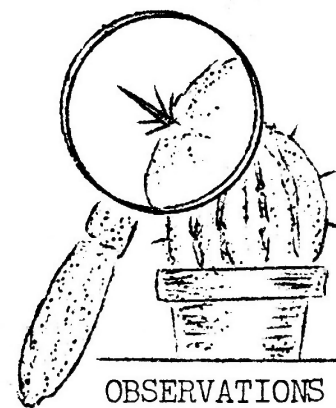
MAMMILLARIA HENNESSII

NEW SPECIES AND GENERA

DO YOU CHEW CACTUS ?

MEALY BUGS -- AGAIN !

Last month in my 'Observations' column I mentioned that I considered Mammillaria hennessii to be a valid species. The plant that I grow under that name (while having some similarities to Mammillaria columbiana) has a body which is a much darker green and it does not develop the well-known "yellow mat" of M. columbiana which replaces the white wool. Also, my M. hennessii proliferates freely from the base, a characteristic never seen in M. columbiana....at least to my knowledge.



OBSERVATIONS of
Cacto-Phil CORLISS

NEW SPECIES AND GENERA: Soon after my visit with Karel Knize in Lima, Peru, he sent me the first plant of a new species he had discovered, the genus of which had not been established. It was the first such plant received in the United States. It had the remains of two yellow flowers which had bloomed in transit. It has since bloomed again and I feel sure it is a Weingartia. Clive Innes of England on a visit here last month agreed with me. This (misnaming) is the sort of thing I wish we could overcome by the use of temporary numbers, or at least until there is general agreement as to proper identification.

I am much in favor of the erection of the new genus "Morangaya" for the plant, which for no valid reason which I can see, has been heretofore called "Echinocereus pensilis". I have grown it for many years, and although it is a 'sky bloomer', Dr. Leroy Phelps photographed the bloom of my plant in the garden. Once you have seen the bloom, you are convinced it is not typical for the Echinocereus genus.

CHEWING CACTUS: When one considers how diverse are the plants of the cactus family, it is not surprising that man has found many uses for its species.... food, shelter, furniture, fences...and there have been many drug and medicinal uses ascribed to cacti. Mescaline and other alkaloids have been isolated. Homeopathic physicians still prescribe a cactus extract for failing hearts. Since I am so allergic to digitalis, or at least very sensitive to it, I am rather inclined to wonder if I might benefit from it.

There is one use for cactus which I have never heard confirmed----its use as chewing gum! There are many plant families whose sap, bark or berries are so used. Did you know that the word 'mastication' is of Greek origin owing to the practice of the Greeks in the 1st Century A.D. chewing a resin from the "mastic tree"?

Why do cactus plants in habitat resist heavy infestations of mealy bugs? Is it possible they do not survive these heavy infestations? I have seen and collected many plants...as I am sure many of you have....that were harboring a large mealy bug population, but I cannot recall seeing plants dead or dying from such attacks in habitat. It is dismaying to discover that what you thought was a 'coat of wool' was instead a nice 'colony of mealy bugs'.

T H E G O P H E R S S T R I K E A G A I N !!

Having had no further signs of gophers for quite some time, Goeff and I were kidding ourselves that we had finally managed to chase them off our property. How wrong we were was proved to us just before we made a somewhat sudden trip to the Grand Canyon this summer. As I tried to dash off a few last minute 'phone calls, I only just had time to alert the Operator to the horrible crackling noise I heard before the line went dead. Apparently those little underground monsters were nibbling through the last strand of wire at that precise moment!

As we packed the last of the luggage in the car, up the driveway came the telephone repair men who promised us a temporary line until they could find time to locate the trouble, and with this we had to be content to start our trip. Upon our return, the temporary line was installed and I was able (thankfully) to dispatch our guests back to England and Michael back to school, without further interruptions.

Just as I had settled down to sort out the Summer's chaos, however, back came the repair men as promised. They would soon locate the trouble, they assured me cheerfully, and then they proceeded to tear up (1) a wide strip of ice plant, (2) part of the driveway, (3) an area of African daisies, (4) another strip of driveway, and (5) so back to the large cactus garden. Yes, it was the gophers all right, they told me, but this time they proposed using gopher-proof wire which they hoped would prove impenetrable. We hope so too!

AFTERTHOUGHT: The mulch for the cactus bed having been washed underground during our battle with the gophers, a vast mass of weeds have covered just about everything. Goeff has suggested digging up the entire bed, moving the cactus up the hill and planting a rose garden instead. I'm thinking about this one! What a project?? But it might just be worth it!!.....Audrey Johnson

I. O. S. CONGRESS

Santa Barbara, Sept. 10--15

Leo PICKOFF

We attended the Congress of the International Organization for Succulent Plant Research in Santa Barbara in September. I.O.S. membership is by invitation but non-members were invited to attend its sessions. It was a never-to-be-forgotten experience and a rewarding week. I.O.S. membership approximates 100 world-wide.

Ever since becoming interested in succulent plants their names have been a challenge to our learning and our plant name vocabularies. Numerous articles have been written and published by many dauntless and unshaken succulent plant explorers and collectors. They have described new plants and in turn have had new plants named for them. Taxonomic revisions have resulted as the byproducts of explorations and study. We now grow new plants (or at least wish we had them) because of the travels and studies of I. O. S. members. We were offered the opportunity to meet, talk with and listen to plantsmen as they presented interesting and informative programs, each to his specialized interest. We are now rewarded with a smiling face to associate with new plant descriptions. John J. Lavranos conducted us on a memorable trip to Socotra, Somalia, Yemen, Ethiopia, Arabia, and so on, with words and color slides of native plants in habitat. They look a bit different in habitat than they do in cultivation. One plant Lavranos showed had been collected in habitat and brought into cultivation and 'lost'.

Another strange plant described by Lavranos is being grown by Frank Horwood who Lavranos describes as "the best grower he knows". Horwood who is associated with the Botanic Garden, University of Leeds, England, accompanied Lavranos on one trip described and pictured an area and plants not shown by his friend and traveling companion. It was announced that a Euphorbia and a Pseudolithos newly discovered are to be named in honor of Horwood. If it is ever my pleasure one day to own these plants, and when they are at their best, I would expect to go out into the garden and discover one or the other of them growing a red beard. And I would expect to hear a glib and sparkling conversation between the two reminiscent or the humor of Horwood.

I've known Gordon Rowley, Prof. of Botany of the Uni. of Reading, England, by reputation for some years. Senecio rowleyanus has been a garden inhabitant for a longer period. Now I should expect it to greet me with a friendly smile or maybe dance in the breeze, or it may quiver in excitement when it flowers in the future.

Len Howton has been receiving "Open Gates" for some years but we never knew whether he was nineteen or ninety. He's neither; he is a displaced Englishman, now Prof. of Botany at the University of Ghana. He presented a program on "Aloes". It's nice to be personally acquainted with readers of "Open Gates".

Before Santa Barbara we had not heard of Cynthia Giddy and Natal. Now we realize the two names are in correct sequence. Cynthia is an authority on "Aloes" and other members of the family Cycadaceae. She left no doubt about her knowledge of these plants and her ability to grow them. We are looking forward to her forthcoming book on the "Cycads of Africa", now a 'must' on our book acquisition list.

If you have an interest in Lithops you recognize the name Brian Fearn. To my surprise I learned this bearded authority on Lithops is a very young PhD with the Botany Dept. of the Uni. of Sheffield. His wife is also a holder of a PhD. It was fascinating to hear Brian tell of his work with Lithops and to see pictures of crosses identical in appearance to some with specific status. Another new book!!

(Continued over)

I. O. S. CONGRESS--continued.

Mr. Bossing of Austria showed a collection of Gymnocalyciums. Many of those received by him from South America are yet undescribed. Quite naturally he has many I have never heard of.

Dr. Friedrich, Secretary of I. O. S. showed pictures of and discussed accounts of "Cacti" described in books of the 16th and 17th Centuries. Some were recognizable as plants in our gardens of the present day.

Mr. Hoesslinger, a German engineer and Treasurer of I. O. S. took us on a cactus hunting trip to Mexico. David Hunt of the Royal Botanic Gardens of Kew, England, also conducted a tour via slides into Mexico. Of particular interest were the variations of Mammillaria rhodantha, and other common cacti.

Hernando Sanchez Mojarada, Institute of Biology, University of Mexico, discussed the 'Cephalium' of Cephalocereus senilis.

The American contingent was hardly in the background. We traversed Mexico, Baja California and its adjacent islands in a hunt for succulents with Dr. George Lindsay, Director of the California Academy of Sciences. Dr. Reid Moran, research Botanist of the San Diego Museum of Natural History, Myron Kimmach, Curator of the Huntington Botanical Gardens and John Bleck of Santa Barbara were speakers.

Mary Bleck presided over a symposium subject of "What is a Species?", and "What is a Variety?" Gary Lyons of Huntington's Desert Garden and Conservation Chairman of the CSSA Conservation Committee presided over a symposium on Conservation. Prof. Edward Anderson of Whitman College, Walla Walla, Washington, showed habitat slides of Thelocactus and related genera which he is now studying. "The Fidelity of Species" was a most interesting program presented by Dr. Lyman Benson, Prof. Emeritus of Pomona College, Claremont, California.

To me, the highlight of the week was the privilege of meeting and listening to Prof. Werner Rauh, Director of the Botanical Garden of Heidelberg, Germany. He is a plant explorer, author and a master of plant photography. He described a trip to Madagascar and told about plants growing in their native habitats and he followed that by telling about destruction being wrought by man and his animals in their fight for survival. Dr. Rauh in his search for Bromeliads showed us the beautiful scenery of Peru and Ecuador. New and exciting varieties of orchids and cacti were discovered on Rauh's trip thru the remote areas of South America.

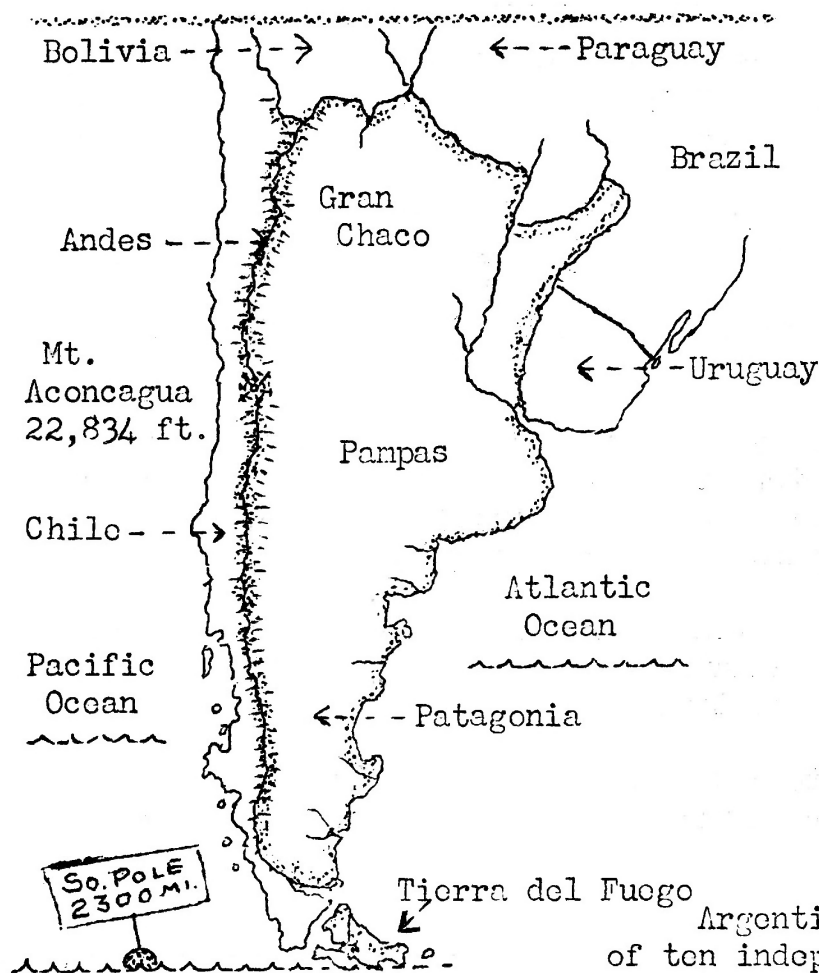
And thus went the I. O. S. Congress. Our English friends discovered Baskin and Robins' 31 Flavors. I don't know whether or not they made it through all 31, but they certainly deserve credit for trying. A pleasant end to our first day at the I. O. S. meeting was a weiner roast on the beach which was hosted by I. O. S. members Charles Glass and Bob Foster. . . .and the hardest working member of the group, Dottie Foster.

I must tell you about the "Whistler". Chairman for the day could never get attention of members and get them seated, nor could he introduce a speaker until the mysterious "Whistler" arose and delivered a loud, shrill reverberating sound throughout the hall. Only then did order prevail and the gavel was forgotten.

In appreciation to the Whistler for "calls to order" he was presented with a copy of Eric Walther's book "Echeverias". And so ended the I.O.S. Congress, 1974. It was a memorable week.

ARGENTINA - - - - - AND ITS CACTI

Francis J. BORG
Paola, Malta, Europe



Argentina's name comes from the Latin word "argenteum" meaning silver. The word "plata" (e.g. Rio de la Plata) also means silver.

Early explorers saw Indians wearing silver, which, however came from another part of South America...probably Bolivia, and they attributed this precious metal to Argentina, although it has no silver.

Argentina is a rich country in other ways. The soil of a part of the country called the "Pampas" is so rich that it never needs fertilizer and the farmers have rich harvests of wheat. Argentina is the world's greatest exporter of cattle, and, what particularly interests cactophiles is that the country is very rich in cactus flora.

Argentina, after Brazil, is the second largest of ten independent South American countries. In it one also finds the widest river in the world, Rio de la Plata, which is more than 100 miles wide where it empties into the Atlantic Ocean. Mount Aconcagua on Argentina's western border with Chile in the Andes is the highest mountain in South America...22,834 feet.

Argentina is one of the world's longest countries. From its northern tip on the Pilcomayo River in the tropics (lat. 22°S) to the Tierra del Fuego, its southmost tip (lat. 56°S) the distance is 2300 miles. Its southern tip is approximately 35° from the south pole, or slightly less than 2300 miles.

Argentina and its neighbor across the Andes, Chile, share an unusual distinction....they are further south than other countries of the world. Argentina covers a land area of slightly over 1,000,000 square miles and its average width approximates 500 miles. It is about 900 miles at its widest.

Few countries in the world have such well-defined physical boundaries as does Argentina:

- 1) Its boundary with Chile on the west follows the crest of the Andes;
- 2) Its eastern boundary is the Atlantic Ocean;
- 3) The Pilcomayo and Paraguay Rivers separate it from Paraguay, and
- 4) The Uruguay River separates it from Uruguay.

Spanish is the official language and many provinces bear religious names given by the first Spanish colonists, such as Santiago, Santa Cruz, San Luis and San Juan. Argentina is divided into 23 provinces and Buenos Aires (good breeze or wind) as its Federal District. It is a large city of about seven million inhabitants which constitute about one-third of the total population. (See over)

ARGENTINA AND ITS CLIMATE -- continued:

Second largest city is Rosario, capital of Santa Fe Province which is in the center of Argentina's farming regions. Third largest city is Cordoba, capital of a Province of the same name in north central Argentina, an agricultural center.

Rainfall in the north and warmer part of Argentina varies from 40 to 60 inches. The central portion of the country has a mild climate with a rainfall of 20 to 30 inches a year. There is less rain however in the Andes. In the high parts of the Andes Mountains, it is extremely cold where many mountain peaks have snow that never melts.

The southern portion of the country is called Patagonia (from Patagos, meaning 'feet' because Magellan saw footprints of Indians in the sand) there may be as little as three inches of rainfall a year. We consider Arizona and New Mexico with rainfall of from 7 to 8 inches annually as very dry!

It gets very cold in Southern Argentina, particularly in Tierra del Fuego, a group of Islands separated from the mainland (see south Patagonia on map) where there is much snow and glaciers in the mountains.

We must remember that the climate and seasons in South America are opposite to ours north of the Equator, where for example in Europe weather is colder in the north and warmer in southern regions. In South America the further south one travels, the colder it becomes.

Argentina generally rises from the eastern coast to the Andes and the pre-Cordilleras in the west and northwest, except in the region between the Parana and Uruguay Rivers in the northeast where the general slope is towards the valleys of these two great rivers.

Only a narrow zone of the Andes is in Southern Argentina, it widens further north. The pre-Cordilleran region including the Sierras de Cordoba, Fanatina, Ancaste and Ambato are lofty, exceeding 15,000 feet. The other major highland area of Argentina is, of course, Patagonia, a table-land which falls from 5000 to 6000 feet near the Andes eastward to the Atlantic, where it ends in cliffs.

There are four main geographical areas in Argentina: 1) The GRAN CHACO in the north, 2) the PAMPAS in the center, and 3) the ANDEAN following the mountains on the west, and 4) PATAGONIA in the south.

The warmer and more humid GRAN CHACO region of northern Argentina can be divided into three sub-regions:

- A) PUNA--the high plateau region along the border of Bolivia,
- B) GRAN CHACO--low in altitude and with forests and jungles, and
- C) MESOPOTAMIA--the region drained by the River Plata and its tributaries. In it are jungles, rivers and swamps. It is an area of heavy rainfall.

GRAN CHACO has a sub-tropical climate, moderately cool and dry in winter and hot and wet in summer. It is ideal for cactus, the soil is not the best for farming. The area is regarded as good hunting country for alligators, jaguars, pumas, tapirs and tigers. (To be continued)

REQUIREMENTS FOR PLANT GROWTH
(University of Illinois College of Agriculture)

The requirements for plant growth in soil culture and nutriculture are the same. The only fundamental difference between the two methods is the manner in which the inorganic nutrients required for growth are supplied to the roots.

TEMPERATURE: There is an optimum temperature (a temperature which produces the best results) range for plant growth. Above or below this range, plants will not do well. Warm-season crops usually do well between 60° and 75° or 80° F., with 60° F. the night temperature. Cool-season crops do well between 50° and 70° F., with 50° the night temperature. Temperatures for best growth should be maintained whenever possible.

LIGHT: Most cultivated plants need large amounts of sunlight. When plants are grown indoors, additional artificial light is sometimes needed. If plants are grown entirely under artificial light, the intensity of the light must be very high without causing the temperature to rise above the optimum range.

WATER: Water should be available in adequate amounts in the soil or in soilless culture for proper growth. Too little or too much water will not give optimum growth.

OXYGEN: In soil that is waterlogged, adequate oxygen should be available. In hydroponic systems for growing plants, there may not be sufficient oxygen in the nutrient medium. To provide oxygen, it is often necessary to bubble air through the solution surrounding the roots.

CARBON DIOXIDE: Carbon dioxide, a gas, is taken up through the surface of the leaf and furnishes carbon and oxygen. These elements are required, along with hydrogen, in the manufacture of carbohydrates (sugars). Carbohydrates are used by the plants as food.

MINERAL NUTRIENTS: The plant must absorb certain minerals through its roots to survive. The minerals required in relatively large amounts are nitrogen, potassium, phosphorous, calcium, magnesium and sulfur.

Those required in small amounts are iron, manganese, boron, zinc and copper. Molybdenum and chlorine are also useful to plants, but the quantities required are so minute that they are usually supplied in the water or along with other mineral nutrients as impurities.

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Note: Information on two systems of "soilless" culture will appear in future issues of Espinas y Flores. . . .WATER CULTURE and AGGREGATE CULTURE.

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ALUMINUM CANS !! \$7 million for Empty Aluminum Cans in '73.

Americans were paid \$7 million last year for turning in empty aluminum cans. The cans were taken to recycling centers -- 1,300 of them nationwide -- and the scrap aluminum is reclaimed at 5 percent of the original cost of making the metal. Aluminum can be recycled indefinitely.

S O Y E E D H A D A S O I L T E S T

NAME YE ED
ADDRESS 3430 WILSHIRE TER
CITY SAN DIEGO, CA 92104

BUTLER'S MILL, INC.
5180 NARANJA ST.
SAN DIEGO, CA 92114
DATE 9-9-74

SOIL ANALYSIS REPORT

Sample Number or Location _____
pH _____ 8.12
* E. C. (conductance $KX10^3$) _____ 2.03
Nitrate (lbs. per acre) _____ 1300 high
Phosphorous (lbs. per acre) _____ 125 high
Potassium (lbs. per acre) _____ 114 med
Iron (lbs. per acre) _____ none
Manganese (lbs. per acre) _____ none
Calcium (lbs. per acre) _____ 1210
Textural classification _____ Sandy loam

* E.C. measures soluble salts. The scale begins at 0. From 0-2 most plants do well. The higher above 2, the more plant growth becomes retarded.

RECOMMENDATION:

Chemically, this soil is good. The EC is slightly high but not high enough to cause a serious problem. Mix six parts soil and four parts Loamox in the backfield for the shrubs also add one to two pounds of gypsum per plant.

Use the forti-pills to feed these for a year or more.

Sandy Loam

Sandy Loam **
Horticulturist

This service disclaims any warranty, expressed or implied, for the recommendation. ** Fictitious name.