

GREENLEE COUNTY

ANNUAL NARRATIVE REPORT

A handwritten signature in cursive script, reading "Ernest A. Foster", written over a horizontal line.

Agricultural Agent in Charge

A handwritten signature in cursive script, reading "Sarah Masters", written over a horizontal line.

Assistant Home Agent

December 1, 1960  
to  
November 30, 1961

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A. EXTENSION ORGANIZATION AND PROGRAM PLANNING, IN SERVICE TRAINING OF AGENTS, AND OTHER JOINT ACTIVITIES

1. Extension Organization

The office of the Agricultural Extension Service is located in Duncan. Although Clifton is the county seat of Greenlee County and is nearer the center of population, Duncan is more centrally located in the farming area and provides closer access to individual farms. The office is staffed by a full time agricultural agent, a home agent, and a secretary. The office serves as a meeting place for various agricultural groups and organizations in the county and also serves as a meeting place for the U. S. Employment Service, Farm Home Administration, Veteran's Administration, and Bureau of Land Management.

Tuesday of each week is devoted exclusively to the Clifton-Morenci area by the county agent, and he receives calls and works out of the supervisors' office in the county court house to provide this service.

Farm Groups

The only active organized men's farm group in Greenlee County is the Greenlee County Cattle Growers Association. This organization, consisting of approximately seventy five members, elects officers annually, holds directors meetings, and special meetings when deemed necessary. They have many committees, of which the Forest Advisory is one of the most outstanding. This unit works closely with the Forest Service on problems concerning grazing lands in the forest. This agent cooperates with the education program and makes regular contacts with association officers.

The "Cowbelles" is the women's division of the cattlemen's association. This organization meets every month, usually at a member's ranch house. The "Arizona Boys Ranch" has been one of the projects of the "Cowbelles". They also take a leading role in the promotion of beef consumption work.

Greenlee County Fair Commission

The Greenlee County Fair Commission consists of four men and three women. They are appointed by the County Board of Supervisors. They meet at such times as deemed necessary by the chairman to plan, organize, and operate the fair. The agents attend all meetings with this group in an advisory capacity.

### Other Groups

The Agricultural Stabilization and Conservation Service and the local R. E. A. Cooperative maintain an office in Duncan for Greenlee County, and the Forest Service operates a regional office in Clifton. The Extension Service cooperates to the fullest extent with these agencies to help further the general agricultural program in the county.

Other adult organizations in Greenlee County consist of two Parents-Teachers Association groups, located at Clifton and Duncan; two Federated Woman's Clubs (Duncan and Clifton); a Business and Professional Woman's Club, at Clifton; two Garden Clubs, located at Morenci; Blue River Cowbells, located at Blue; and four service organizations (2 Rotary, 1 Lions, and 1 Kiwanis), three of which are in the Clifton-Morenci area.

### Homemakers Clubs

There are six organized Homemakers Clubs in Greenlee County. Four are in the Clifton-Morenci area, one in the York community, and one at Duncan. The president and secretary of each group serve on a county council for purposes of planning and administration of local programs, procedures, and policy. These clubs are generally very active and have good leaders. They have a total membership of 103.

### 4-H Clubs

All 4-H project clubs in the county are organized into four large community clubs, located at Morenci, Clifton, York, and Duncan. Both agents assist community leaders with monthly meetings, events and activities, leader training sessions, county council meetings, and program planning sessions. Membership averages about 130. New projects are added each year in an effort to make the program more interesting. Junior leaders assist with planning, organization, and operation of project clubs in so far as they are qualified, as well as recruiting and giving assistance to new members.

## 2. Program Planning

Work plans this year emphasized training of local leaders in home economics and youth projects and in agricultural and home economics demonstrations for both groups and individuals. Local groups representing both home economics and 4-H have always assisted with county program planning, but an over-all, general program advisory committee was not organized until last year.

This general program advisory committee now consists of representatives of Homemakers, 4-H, Parents-Teachers Associations, Cowbells, and cattlemen's groups, as well as cotton growers, sportsmen, educators, retailers, bankers, and county officials. Much of next year's program planning has emanated from this group.

During the month of April, the remaining members of the overall County Extension Program Advisory Group, who had not previously been personally contacted, were met with by the county agent at the Fritz Ranch on the lower Blue River. These members consisted of Fred Fritz, representing the cattle ranchers and the Cattlemen's Association; Mrs. J. E. Joy, representing the Blue community; and Mrs. Mosby Wilkerson, representing the Cowbelle's Association. The Extension program was explained to them by the county agent and the general concept of the Scope Report. All three members expressed a willingness to cooperate and were grateful for having been selected to represent their particular groups. All three members agreed to discuss program planning with their groups in preparation for a meeting with Extension personnel at a later date.

A more unified program involving the areas of home economics, youth, and agriculture is presently being undertaken at county worker level. This tends to share the feeling of responsibility among the office personnel for the entire program. Certain phases of the program, however, must of necessity remain within the specialized field of the agent concerned.

Both agents contacted three of the members of the County Extension Advisory Group who reside in the more remote areas of the county for individual program planning conferences. The other members of the group were contacted during September. Some very interesting ideas were brought out by these group members as items they wished to be included in the County Extension program. It is apparent that this group needs occasional reminding as to our program limitations and that we are not primarily a service organization.

Different members of the seven member Greenlee County Fair Commission conferred several times during August with the Extension Agents in regard to finalizing plans for the 1961 Greenlee County Fair to be held September 29 to October 1. Extension Agents act in an advisory capacity only to the county fair commission. It is the opinion of the agents that most fair exhibit emphasis should be placed on the later improved and recommended varieties, breeds, methods, and styles to promote their adoption within the county, with lesser recognition directed to the more obsolete types.

In June, the Executive Committee of the County Homemakers Council met with the home agent to begin program planning for 1962. A questionnaire was developed to send to each Homemaker giving her an opportunity to express her needs and interests.

In July, the list of possible program ideas in all areas of Home Economics was sent to each Homemaker to give her an opportunity to express her interests. The list was reviewed by a small group of Homemakers before being sent out and was returned to the assistant home agent or to the club vice presidents. Three short meetings were held in August and September with the vice presidents and project leaders to define the homemakers' program for 1962-63, using the results of the idea sheets as a guide.

Three Homemakers assisted the assistant home agent in planning and conducting a County Homemakers Hobby Day on July 26. Each Homemaker who attended brought a craft and spent about ten minutes showing and telling how she did it, what materials were needed, and where they could be obtained. Although only nine women were able to attend, they felt that the meeting was worth while.

The assistant home agent had a conference with Miss Wood of the American Baking Institute in Tucson on July 7. The purpose of the conference was to discuss a possible program on nutrition for leaders in Greenlee County to be conducted by Miss Wood.

Clothing Specialist Helen Church was in the county on August 10 to help the assistant home agent in planning the fall clothing program for the Homemakers and 4-H leaders.

Homemanagement Specialist Corinne Stinson was in the county August 24 and 25 to help the assistant home agent with program planning. Seven Homemakers were present, and home management leaders met to discuss and decide on several possible home management lessons for 1962 and 1963, based on the check lists which had been sent to all homemakers.

The county agent and assistant home agent visited the Blue ranching area August 29 and 30. The assistant home agent did some preliminary program planning with the women in the area on possible clothing or upholstery workshops for next winter.

The clothing leaders and vice presidents met with the assistant home agent after the Leader Training Meeting on September 15 and planned the clothing area of the 1962 Homemakers program.

Both agents participated in the Program Planning Conference in Tucson, September 26 and 27.

The home agent and county agent met with the County Homemakers Executive Council members at the York Club House on October 4 to make plans for the Fall Council Meeting. It was decided that the Coronado Club would act as hostess club; Clifton would furnish the salad; Morenci, the vegetables; Plantsite, the bread, butter, and relish; and Duncan and York Clubs would furnish dessert. The Fall Council Meeting would be held at the Clifton Elks Club on November 8, and the county director of Civil Defense and the county agent would present a Civil Defense program. An apron sale was also arranged to raise money for delegates to Town and Country Life Conference.

The county home agent met with a group of 10 program representatives from the various Homemakers Clubs on October 11 and planned the Homemakers program for the coming year.

In March, the clothing leaders of the Morenci and York<sup>y</sup> Homemakers Clubs were assisted by the Home Agent in planning club program for that month on "Why We Dress As We Do". The assistant home agent met with the president and vice president of the Greenlee County Homemakers Council and planned the agenda for the Executive Board meeting held on April 4.

3. In Service Training of Agents

In-service agent training for the year is indicated below:

Annual Conference	Jan 16-20	Both Agents
Upholstery Workshop	Jan 20-25	Home Agent
Winter Short Course	Jan 30-Feb 16	County Agent
New Workers Conference	Mar 20-23	Home Agent
Home Agents Conference	May 1 - 5	Home Agent
Town & Country Life Conference	June 6-10	Home Agent
Program Planning Conference	Sept 26-27	Both Agents
Cotton Conference & Field Day	Oct 17-18	County Agent
Civil Defense Monitoring School	Oct 23-24	Both Agents
Administration & RAD Conference	Nov 2 - 3	Both Agents
Cattle Growers Conference	Dec 7 - 8	County Agent



## B. AGRICULTURE

### 1. Agricultural Production

A considerable number of letters come to the county agent requesting specific information. These letters usually come from outlying parts of the county. Prompt attention is given to such letters. The desired information is given when possible. A field visit is made to the farmer concerned at the earliest possible convenience when the problem warrants it. Questions on certain subjects often are discussed through the news column.

Field visits, perhaps, are the most valuable information tool in Greenlee County. Through tradition, local farmers have grown to expect more from field calls than from any other form of contact with their county agent. Farmers can most readily be contacted on their farms. Individual and group demonstrations are very well accepted by farmers when made in conjunction with field visits.

Four group pruning demonstrations were conducted during January by the county agent. Two result demonstration orchards were worked on. The two projects have served as guides for other home orchardists. The four demonstrations were conducted in Duncan, York, and Clifton.

Many methods demonstrations, both individual and group, were provided by the agent during the month of January. Some of these involved winter lawn care; rodent control; livestock vaccination and castration; and pruning of orchards, vineyards, and roses.

Vegetable growers have been visited and assisted with plans for growing new market varieties. Fertilizer and irrigation programs were also discussed.

Group pruning demonstrations were conducted throughout the county in February. Fruit trees, ornamentals, and grapes were used as demonstration material.

Since February was generally frequented by low temperatures and inclement weather, gophers were very active, which presented an excellent time for eradication demonstrations.

Several methods demonstrations were conducted during March involving the vaccination of horses to protect them against Equine Encephalomyelitis (sleeping sickness) which is quite prevalent in this area. Since the vaccination involves injection of the vaccine between the two skin layers, many horsemen and ranchers were not too familiar with the process. It is estimated that nearly fifty percent of the horse population of Greenlee County was vaccinated during March. Since this disease is transmissible to other animals and birds, as well as man, most horsemen are aware of its danger.

On March 29 and 30, the extension agronomist assisted the agent in establishing an alfalfa variety demonstration on the J. Brooks ranch near Blue, Arizona. The elevation of this area is about 6,500 feet, and the growing season is short. A cultivated pasture grass demonstration was also planned out for this area, as well as for the Duncan valley. Forage sorghum and grain sorghum variety demonstrations were also planned for the Duncan valley, and one grower planted a 1517 D cotton variety beside a 1517 C variety for comparison. Another farmer, in the upper Blue valley, planted a short season Minnesota variety of field corn for a maturation demonstration.

On February 27, the Graham and Greenlee County Extension Agents joined forces to conduct an all-day farmers day at Safford in Graham County. Since Safford is the trading center for both counties and an experiment station is located near there, it was thought that the location might be satisfactory for both counties. Over 100 farmers, ranchers, and dairymen attended the series of meetings as well as several vocational agricultural classes. All sessions were developed around farm, dairy, livestock, and poultry production. New methods and research developments were stressed, also.

Heavy infestations of *Lygus* bugs were found in some cotton fields adjoining alfalfa during the latter part of July, and several farmers, with counts of 20 to 24 adults and nymphs per 100 net sweeps, sprayed with Texaphene and DDT. Other cotton fields were carefully watched by the county agent for abnormally high buildups.

A short but rather heavy infestation of Harlequin bugs appeared in most vegetable gardens in early July but were quite well controlled by Sabadilla and Rotenone dusts. In about two weeks the bugs disappeared nearly as suddenly as they appeared.

Also, during July the county agent examined the results demonstration plots of grass and alfalfa varieties in the extreme northeast corner of the county in the Blue valley. This high valley has an elevation of from 5,000 to 7,000 feet and consequently a short growing season. Many inquiries are received by this office as to adaptable varieties for this area.

Two local farmers agreed to cooperate in the county TVA pilot fertilizer demonstration. The program will begin next spring and each grower will use recommended amounts and types of TVA fertilizers on at least half of his farm land.

The Cotton Producers Institute and the Cotton Growers Association representatives met with the county agent on September 20 to discuss plans for a meeting with cotton growers in the county during October. Plans were made to discuss the promotion of cotton fiber in industry in view of the increasing use of synthetics.

The annual Graham-Greenlee County Dairy Herd Improvement Association meeting was held on November 16 at Thatcher, Arizona. Greenlee County, at present, has only one dairy affiliated with this organization, but it has taken an active part in all its activities.

Cotton harvest was delayed during most of the first three weeks in November by rains. A few rainy days during each of these weeks delayed the harvest, but since winds did not accompany the rain, there was very little fallout or damage to the lint. Most of the cotton is being harvested with machines this year. Special financing arrangements by implement manufacturers have made this expensive equipment available to even the smaller growers.

## 2. Marketing, Distribution

On the suggestion of the general manager of the Clifton-Morenci Phelps Dodge Mercantile Stores, all vegetable growers in the Duncan valley were contacted by the county agent in December to discuss a cooperative marketing arrangement. The Phelps Dodge Mercantile manager was of the opinion that his four stores could use all the vegetables now being produced in the valley provided they were properly processed. No final decision on this project was reached during the year.

On October 4, the county agent called a meeting of all cotton growers in the county with representatives of the Cotton Producers Institute and the National Cotton Council to discuss the promotion of the use of cotton textiles in the consumer market. The growing popularity of synthetic fibers was pointed out, as well as the disadvantages and advantages of synthetics as compared with cotton. It was agreed by all growers and ginners that one dollar per bale should be deducted from the growers price by the gin and this money turned over to the Cotton Producers Institute to help establish a fund for research and promotion of the cotton market.

The county agent attended the ginning conference at the Cotton Research Center near Tempe on October 17 and then stayed over for the Cotton Research Field Day on the following day.

### 3. Conservation of Natural Resources

On December 16, Mr. Ike Rogers of the USDA Fish and Wildlife Service, at Phoenix, and their predator control agent, Mr. Earl Long, of Pima, met with the county agent at Duncan, and the three proceeded with a rodent damage survey of the farming area of Greenlee County. Particular attention was taken of cotton rat and gopher depredations, and plans were made for gopher control demonstrations. It was decided that the cotton rat damage did not necessitate control measures being taken at the present time.

### 4. Leadership Development

The assistant home agent met with the Executive Committee of the County Homemakers Council on April 4 to plan for the Spring Council meeting on April 26. The Council voted to have the officers serve two years with half of them being elected on alternate years. The guest speaker was Margaret O'Connell of Clifton. Her topic was "Youth in Greenlee County". A mad hat contest, style show, and white elephant sale were part of the program following a potluck luncheon.

The county agent attended the special winter short course session at the University of Arizona at Tucson from January 30 to February 16 as a means of improving his services to the county. Courses were taken by the agent in Rural Group Leadership and Agricultural Policy.

### 5. Community Improvement

A municipally owned sewage disposal system was completed by the Town of Duncan during June and promises to be a big improvement to the community. A new television rebroadcasting system has also been purchased by the Duncan-Virden residents and has already been approved and licensed for immediate use. This instrument will allow the receiving and rebroadcasting of one channel and should be a big improvement over the old equipment by providing a better picture.

On December 7, Dr. J. W. Pou, Extension Director with The University of Arizona, met with the Clifton-Morenci Rotary Club and gave a very informative and interesting talk on Farm-City relations in observance of Farm-City Week.

The assistant home agent judged at the Pine and Young fairs in Gila County, September 22 and 23, and assisted the foods, clothing, and 4-H superintendents at the Greenlee County Fair, September 28 - October 1.

## 6. Public Affairs

The Greenlee County ACP Committee met on June 30 and very carefully reviewed each of the old county ACP practices. New practices or amendments to old ones were recommended where it was deemed necessary by the committee to best fulfill the needs of farmers and ranchers during 1961. The county agent always meets with is group.

C. HOME ECONOMICS

1. Family Living

a. Program Development

A short Christmas news letter was prepared by the agents and sent to the County Cattlemen and Cowbells. The letter contained a Christmas candy recipe; tips on spot removal; a few interesting facts about coffee; figures on cattle, cotton, dairy, and vegetable production in Greenlee County; and information on clearing muddy ponds and sealing ponds with salt.

The home agent attended two of the Homemaker's Christmas meetings in December. The Clifton Homemakers Club has increased from 10 to 18 members this year and has had 8 to 10 more women in the community express an interest in joining.

The Homemaker's yearbooks for 1961 were made and sent to the clubs along with new secretary books and the program for the year.

The Greenlee County Homemakers Council held its fall meeting on November 8 at the Clifton Elks Lodge. Thirty women attended the meeting which began at 9:30 A. M. with registration, followed by the business meeting and election of officers. Each Homemaker brought an apron she had made to be auctioned to raise money for the council treasury. Following the potluck dinner, new officers were installed, achievement certificates were presented, and Mr. Ruben Garza, County Civil Defense Director, gave a talk on fallout and supplies for shelters and showed a film "Operation 'Cue'". Both the county and home agents attended the meeting.

Both agents assisted the county Civil Defense Director and the county chairman of Farm-City Week with plans and arrangements for county-wide meetings in November. Three talks were given by the county agent on rural Civil Defense fallout protection to the Duncan Parents-Teachers Association and Rotary Club, with the aid of illustrated charts made up by the home agent and moving picture films furnished by the county Civil Defense Director. Both agents also assisted the County Farm-City Week Chairman plan a program for all civic organizations and 4-H groups in the county. Invitations were sent to all rural and 4-H people in the county by the Extension office, and local civic organizations invited the urban people. There were very good crowds at both meetings.

b. Foods

Many requests for the Extension Circular "Arizona Christmas Foods" were received throughout the month of December.

In March, the assistant home agent prepared a lesson on "New Hunches on Sandwich Lunches" with the assistance of the nutrition specialist. The lesson was given to each of the Homemakers Clubs and emphasized planning and serving nutritionally well-balanced sandwich meals. Four types of sandwich fillings were demonstrated, and the Homemakers learned the self-seal wrap for sandwiches.

The home agent arranged a special interest demonstration at the Clifton School on October 19 by Miss Una R. Wood of the American Institute of Baking. Her demonstration was entitled "Convenience Foods in Fancy Fashion". Miss Wood was accompanied by the Extension Foods Specialist from the University of Arizona. About 40 homemakers from throughout the entire county attended the demonstration.

The assistant home agent prepared and presented a leaders training meeting on November 15 for the Homemakers Clubs foods leaders. The lesson on Holiday Foods covered the steps in planning holiday entertainment and ideas to dress up holiday foods. Ten homemakers attended the meeting. During the summary part of the lesson, the homemakers contributed many of their own ideas, also.

c. Home Furnishings

Two days before Annual Conference were spent in Tucson obtaining and stripping down a chair in preparation for the Upholstery Workshop conducted by the home management specialist, Corinne Stinson, from January 20 to 25. The home agent also spent January 26 completing the chair. The home agent participated in the workshop in preparation for the Upholstery Workshops in Greenlee County in May.

During March, arrangements were made with Long's Furniture Store in Safford for the Homemakers Clubs to tour the store in May and receive information on selecting furniture.

The assistant home agent visited the 15 women who signed up for the Upholstery Workshops to see their chairs and help them plan what equipment and supplies they would need and the work to be done before the workshops. The workshops were held in May. Six women in the county participated in the Upholstery Workshops which were conducted by the assistant home agent. All of the six women felt that the workshops were a satisfying experience and expressed a greater appreciation of upholstering.

For their May lesson, the Homemakers Clubs toured Long's Furniture Store in Safford. Mr. Robin, the store's interior decorator, gave them information on the construction of wood furniture, explaining the differences and characteristics of solid wood and veneers. He also told them about some of the new things in upholstery fabrics and gave them ideas on planning color schemes. Mr. Perkins, the kitchen sales manager, explained the principles and demonstrated the operation of a retained heat oven. The women were treated to a luncheon prepared in the oven.



d. Clothing

On December 27, the home agent had a conference with the State Clothing Specialist to plan for the January Homemaker's lesson on Pattern Selection. Three more days were spent in writing out the lesson and developing illustrative material.

On January 9, the home agent conducted a leaders training meeting on Pattern Selection for the Homemakers Clubs. Nine leaders were present.

The home agent had a conference in Tucson with the clothing specialist, Helen Church, on January 13, prior to Annual Conference. The purpose of the conference was to make plans for the Basic Pattern Workshops in February. Two days at the end of the month were spent making arrangements and preparations for the workshops. Three workshops were scheduled in January. Each workshop met twice in February and once more in March. Clothing Specialist Helen Church assisted the home agent in conducting the first two workshops on February 8 and 9. The 24 homemakers participating in the workshops learned how to alter patterns by making basic fitting patterns in muslin.

The assistant home agent helped the clothing leader of the Duncan Relief Society plan a lesson on Line and Design.

In April, the executive committee of the County Homemakers Council asked the assistant home agent to plan a style show of the dresses that had been made as a result of the Basic Pattern Workshops held in February and March for the Spring County Council Meeting. Eight dresses made from basic patterns and three basic muslin patterns were modeled by Homemakers.

The assistant home agent conducted a Shoe Covering Workshop on May 9. Sixteen women attended and repeated the lesson in four of the Homemakers Clubs.

The assistant home agent conducted a leader training meeting on Fiber Labeling on September 15 for 11 Homemakers Clubs leaders. The lesson covered fibers - what they are, natural and synthetic, their characteristics, the generic names of synthetic fibers, and how they should be cared for. The parts of the Fiber Labeling Law of most interest to consumers were discussed and the Sure Care Symbols by the National Retail Merchants Association.

d. Clothing (Continued)

In September and October the assistant home agent conducted a four-meeting "Better Dress" Workshop. This was a follow-up on the Basic Pattern Workshops held in the spring. Only four of the women who participated in the Basic Pattern Workshop were able to take part in the Better Dress Workshop.

Seven women in Duncan asked the assistant home agent to repeat the Basic Pattern Workshop. After a preliminary meeting, three decided that they did not have the time to devote to the workshop, but the remaining group not only completed their basic patterns but agreed to meet enough extra times to make a better dress also. In all, the group met for seven all-day meetings. Most of this group are not Homemaker Club members.

e. Health and Safety

The County Emergency Planning Committee, consisting of the ASC office manager, the County Extension Agent, and the District Forest Ranger, participated in the nationwide alert on April 28. Although no instructions could be picked up on the Conelrad stations, a general alert was recognized in conjunction with schools and local fire departments.

During the month of May, a homeowner from the Chase Creek area near Clifton reported a serious infestation of assassin bugs in their house. Several members of the family were under a doctor's care as a result of bites inflicted by these insects. They reported having tried various insecticide sprays around their home with very poor results. The county agent inspected the home and found it to be of frame and adobe construction with many openings which would provide good hiding places for these pests. The house was also surrounded by cliffs and boulders which probably provided more hiding places and lessened the chances of control. Electricity was unavailable so that outside light traps could be used. Dieldrin and Diazinon sprays were suggested by the agent to be used in and around all openings in and under the house and out-buildings, with tighter fitting screens and screen doors.

On October 3, the county agent was invited to attend a meeting at the county court house at Clifton with the state health officer, the county attorney, and the clerk of the board of supervisors. This meeting was called to discuss the advisability of establishing a county sanitary official position in Greenlee County. Unfavorable conditions of food vending establishments and school cafeterias were pointed out by the county attorney, and the county agent stressed the need for periodic sanitary inspections of our two local dairies. The necessity of periodic inspection of sewage disposal systems was also brought out by the health officer as well as checking domestic water systems for contamination, garbage disposal areas, and fly control in residential areas. It was pointed out that both Clifton and Morenci had appointed part-time sanitation officers but neither was properly qualified or had the time to handle the job effectively. The clerk of the board of supervisors stated that since there were so few establishments and other areas requiring inspection that a full-time sanitary officer position could not be justified at this time, but it might be possible to share one with another county or to find someone properly qualified who would be willing to do the sanitary work on a part-time basis.

e. Health and Safety (Continued)

On October 6, the county director of Civil Defense and the county agent met with the Duncan Parents Teachers Association members and presented an illustrated talk on Civil Defense fallout protection. About 200 members were present.

Both the home agent and county agent attended the two-day Civil Defense Monitoring School at Globe on October 23 and 24. Upon completion of the course, both agents were awarded completion certificates and declared eligible to function as a monitoring team for Greenlee County. The county director of Civil Defense later ordered complete monitoring kits for use by this team in the Duncan area.

f. Home Beautification

On December 2, Extension Horticulture Specialist Harvey Tate visited the county office and plans were discussed with the county agent regarding an ornamental winter kill demonstration for the Duncan area. Many varieties of ornamental shrubs and trees that thrive in the Clifton-Morenci area, reportedly, will not survive the winters at Duncan. It was decided that a few ornamental shrubs should be tried in cooperation with a local nursery.

On January 12, the county agent conducted an illustrated lecture and demonstration for the Stargo Garden Club on ornamental plant propagation and plants common to both Hawaii and Arizona. Sixty colored slides were used in this program along with plant propagation materials.

Many group and individual pruning demonstrations were conducted by the agent during January. Plants involved included ornamental shrubs, fruit and shade trees, grape and ornamental vines. Three methods demonstrations were conducted in Morenci, three in Duncan, two in Clifton, one at York, and one at Franklin for both groups and individuals. Many residents of the county can now do their own pruning, and some are quite proficient.

The county agent conducted a pruning and landscaping demonstration at the Robert Mann home for the community of Plantsite Number 1 at Morenci on February 21. Since most of the residents of this area were working on the day shift at the mine, the turnout was limited to only five or six people. Those in attendance expressed their appreciation, however, and it is felt that the demonstration was well worth while.

The county agent met with the Stargo Garden Club on October 12 and presented a talk on "Improving Garden Soils". Illustrated charts for the program were prepared by the county home agent, as well as certain phases of the text that was used.

g. Home Improvement

During the month of April, the county agent assisted the Morenci Woman's Club in organizing a county flower show. Rules and regulations were drawn up by the agent and approved by the sponsoring committee. The show was held on April 22 in the American Legion Hall in Morenci with over 500 entries. The county agent and two ladies from Clifton and Globe acted as judges. A style show was put on by a clothing firm in Safford in conjunction with the flower show, and refreshments were served. Spectators for the day were estimated as over 1,000.

Four Homemakers and the assistant home agent from Greenlee County attended the 15th Annual Town and Country Life Conference on the University of Arizona Campus from June 6 to 10. The classes, workshops, exhibits, and talks were built around the theme, "The Family Meets the Challenge of the Changing World". The program provided many new ideas for the Homemakers to share with their clubs and communities.

## D. YOUTH DEVELOPMENT

### 1. Local 4-H Club Program

All 4-H Clubs in Greenlee County are organized into four community clubs which meet regularly once a month. All clubs developed written club programs. Junior leaders were a means of assuring that programs were well planned. Demonstrations were a part of each club meeting. Recreation, health, safety, and community service as well as project work were included in the planned programs.

The Morenci Community 4-H Club is led by Mrs. Dean Scott, a former extension worker and 4-H member. Assisted by 12 leaders, this group assisted 4-H members with project work in Child Care, Automotive, Clothing, Crafts, Electric, Entomology, Food Preparation, Home Grounds Beautification, Home Furnishings, Junior leadership, Photography, and Geology. All project groups prepared their own program plans under the guidance of the project leader. 125 projects were enrolled in by members of this club, with a completion of 116. Membership completion was 95 percent. Average attendance per member was 17 meetings. Five members had 100 percent attendance record, and some members attended as many as 63 meetings during the year. Other activities in the Morenci club program were a Christmas party, club picnic, club tours, family dinners, local club fair, and miscellaneous meetings.

The Clifton 4-H Riding Club was organized a year ago under the leadership of Mrs. Carolyn Murry, wife of Greenlee County Superior Court Judge Porter Murry. Enthusiastic townspeople and parents have supported Mrs. Murry's project to the hilt. This club participates in 4-H sponsored events in addition to monthly rallies, cook outs, moonlight rides, parades, exhibitions for parents, and fairs.

The York Community 4-H Club is under the leadership of M. Easton Frazier, a former 4-H member and a leader completing his sixteenth year in club work. Dairy, beef, and stock horse projects were the most popular agricultural projects carried in this club. Other projects included swine, poultry, garden, home grounds beautification, rabbits, clothing, and food preparation. The York club has carried on a very successful recreational program for several years. Mr. and Mrs. Easton Frazier were named the "Outstanding 4-H Family" last year due to their family participation in 4-H Club Work.

The Duncan Community 4-H Club meets once a month at the REA Office. The Duncan Valley Electric Cooperative furnishes both a meeting place and two adult leaders for this group. Projects carried in this club were clothing, food preparation, beef, electric, poultry, rabbits, dog husbandry, stock horse, and junior leadership. Community service work for this group included serving as librarian each afternoon throughout the summer months to relieve the members of the Duncan Woman's Club.

## 2. Leadership in 4-H Club Work

Greenlee County's 4-H program has been functioning through the Greenlee County 4-H Leaders' Council to good advantage. The leaders are assuming more responsibility in planning of local and county programs. The agents sit in as advisors to the leaders' council.

The county agent and home agent conducted the first of a series of 4-H community leader training meetings at Morenci on October 24. The 4-H community leader from York also attended this session.

The home agent called on new 4-H leaders to acquaint them with the foods and clothing projects and 4-H organization. The county agent and home agent attended the 4-H council meeting at the fairgrounds at Duncan on September 24 to assist with 4-H fair plans.

### Junior Leader Lab.

Greenlee County was represented by six Junior Leaders and one adult leader at the annual State 4-H Junior Leader Laboratory held at Friendly Pine Camp at Prescott. These 4-H'ers returned full of praise for the laboratory, and this valuable leadership training has been used by them in assisting the local and county program.

### Leader Training

Assistant State 4-H Leader Sarah Harman was in the county on December 6 for a program planning conference with the agents with special emphasis being given to leader training.

On February 23 and June 5, two 4-H leader training meetings were conducted by the agents at the Country Club at York. Five adult leaders and 8 junior leaders attended these meetings.

### 3. Activities

At the request of the leader, the home agent prepared a lesson on Fabric Selection and Color for the Morenci second year 4-H clothing girls. Seven girls; Mrs. Lee, their leader; Ernest Foster, county agent; and Sarah Harman, Assistant State 4-H Leader, were present at the meeting.

The agents worked with two new 4-H leaders in Clifton during December helping them to make plans for organizing a new 4-H Club in the Chase Creek area of Clifton.

The state safety plaque and the traveling state automotive trophy were awarded to the Morenci Community 4-H Club at their Christmas party on December 30.

Mr. Eddie Martin, General Manager of the Phelps Dodge Mercantile Stores in the Clifton-Morenci area, was presented with an engraved bronze plaque in recognition of his organization's outstanding contributions of time, effort, and financial assistance to the county 4-H program. The presentation was made by County Agent Ernest Foster and Home Agent Sarah Martens on behalf of the 4-H members of Greenlee County.

On the request of a local Boy Scout troop leader at Duncan, a 4-H dog husbandry project was made available to a group of 14 Spanish-American Boy Scouts. Their leader agreed to lead the 4-H project as a separate organizational function. They met each Tuesday night in the American Legion Hall in Duncan.

Both agents attended the York Community 4-H meeting on January 5 at the request of the leaders. These community meetings are sponsored once each month by the various 4-H project clubs in the community. All 4-H parents, as well as all other residents of this rural community, are invited to attend. These meetings are always highlighted by outside speakers, travel movies, or special talent that will be of interest to both adults and young people. At this meeting, a Phelps Dodge safety engineer showed a movie and gave a talk on safety and Civil Defense. This event was followed by the presentation to the club of a large serving tray by the County Assessor. This tray was made of highly varnished wood and was etched with all the local cattle brands burned on its surface. The tray was edged with hemp rope impregnated with shellac. A handle on each end was made of the same material.

The agents also visited prospective 4-H leaders in Clifton during the month of January.

The assistant home agent participated in the 4-H Training Conference held at Holbrook, February 14-17. The conference, conducted by the Assistant State 4-H leader and the clothing and nutrition specialists, covered the 4-H foods and clothing projects, demonstrations, and judging.

During February, the assistant home agent helped two 4-H leaders with plans for their project meetings.



The county agent and assistant home agent assisted the Morenci Community 4-H Leader conduct a community spring party on the evening of February 27. All 4-H parents were invited, and a very interesting safety program followed the potluck dinner. State Highway patrolmen and mine safety engineers gave tlks and showed films on accident prevention, and the extension agents showed films on teenage driver safety.

On February 28, the county agent met with sixteen Clifton 4-H Horse Club members and their fathers and explained the advantages of annual vaccination programs to prevent sleeping sickness of horses. A vaccination demonstration by the county agent followed the talk, and youngsters and their fathers were assisted in vaccinating their own horses.

On February 23, the county agent and assistant home agent met with community 4-H leaders and discussed dates and plans for a County 4-H Camp. It was decided that we should try to get reservations for camping facilities at Camp Thunderbird, near Santa Rita, New Mexico, for the middle or latter part of August for a three-day camp.

On Saturday, March 4, the county agent assisted with the annual District Vocational Agriculture Field Day Contests at Eastern Arizona Junior College at Thatcher, Arizona. Contests involving identification of living specimens of ornamental plants and weeds, weed seeds, and cultivated crop seeds were set up by the agent. Judging contests involving barley, sorghum, baled hay, alfalfa seed, apples, oranges, potatoes, carrots, onions, and lettuce were set up with official placings and reasons by the agent. Agricultural agents from Graham and Cochise Counties also assisted with other phases of the program.

During March, the assistant home agent helped the 4-H clothing II leader, Mrs. Lee, of the Morenci club plan lessons for the rest of the year, and attended the 4-H project meeting.

The county agents contacted leaders about 4-H delegates to Junior Leader Laboratory during April.

The Assistant State 4-H Leader was in the county on April 27 for a conference with the agents and Mrs. Scott, Morenci 4-H leader, who will be helping with Junior Leader Lab.

Plans were made for a county 4-H council and leaders training meeting at a later date.

On May 20, the Morenci Community 4-H Club held a Community 4-H Fair and chili dinner. It was estimated that over 250 visitors attended. All project work was displayed to the public, and a style show and dress revue followed the dinner. This appears to be an excellent way to advertise 4-H and stimulate interest within the community.

The county agent and home agent planned and conducted a 4-H Judging and Demonstration Training Day on June 5. Fifteen 4-H members and 4 leaders attended. They participated in practice judging rings, demonstrations, and public speaking. A vegetable judging elimination contest was staged that evening to select a team from the eight contestants to represent Greenlee County.

A Civil Defense program was presented to the Duncan 4-H Community Club on June 12 by the county agent. About 25 members and parents were present. Protection of food, water, livestock, and crops on farms were stressed. Two movies, called "Operation Cue" and "Your Civil Defense", were shown to the group and were well received.

On July 21, all six junior leaders who had recently attended 4-H Junior Leader Laboratory at Prescott met with the agents and planned the County 4-H Camp program. Each junior leader elected to take charge of the camp activities in which he or she had received training at Junior Leader Lab. A local homemaker agreed to act as camp cook, and the home agent put in considerable time with her in preparing menus, budgets, and grocery lists.

The county agent and home agent organized and conducted a County 4-H Contest Day on July 20. Judging rings were set up for foods, clothing, vegetables, and livestock. Demonstrations, public speaking, talent, and dress revue contests were also conducted and judged. All judging officials was done by two Homemakers from the Clifton-Morenci area. Additional vegetable judging contests were held on the evening of July 20 due to the increasing interest in this activity, and on July 23 a county contest was held on poultry judging. Both agents devoted much time and effort, after the county contests, toward improving the ability of the selected Roundup delegates.

Most of the agents' time and energy was devoted to 4-H events during the month of August. From the first to the fifth was a continuation of the State 4-H Roundup at Tucson, and from the sixteenth to the nineteenth the County 4-H Camp was held at Camp Thunderbird, some 20 miles from Santa Rita, New Mexico. Plans were made during the month to reorganize two large community 4-H Clubs, and much time was also devoted to 4-H program and 4-H fair planning events.

Thirteen Greenlee County 4-H members attended the State 4-H Roundup at Tucson from July 21 to August 4. Both agents and two adult leaders accompanied this delegation.

Forty 4-H'ers and eight adult leaders and councilors participated in the County 4-H Camp which took place from August 16 to 19. Dr. J. N. Roney, Extension Entomologist, and Graham Wright, State 4-H Leader, were guests of honor and added much enthusiasm and interest to the program.

Plans were made during the latter part of August to reorganize the community clubs at York and Duncan and plan their 4-H programs for the coming year. It was decided by the county council that more emphasis would be put on individual project clubs during the coming year, and only projects with good substantial leaders would be continued. Plans were also made to completely reorganize the County 4-H Council and begin some new leader training sessions.

The county agents made 12 home visits to prospective 4-H leaders in September. Six new home economics project leaders were located. The assistant home agent made follow-up visits to them to explain the project requirements. New leaders were also established for the York and Duncan clubs in automotive safety, home beautification, and gardening. Both agents attended and assisted with the reorganization meetings of the Duncan and York 4-H Clubs. They also attended the County Council meeting on September 13 to plan for the 4-H foods booth at the county fair.

All county 4-H'ers were required to exhibit their project work at the Greenlee County Fair which took place on September 29 through October 1. The Greenlee County 4-H Leaders' Council cooperated in operating the 4-H concession stand at the fair again this year. Profits from operation of the booth will be used for 4-H promotion, special 4-H educational events, and 4-H junior leader fees to conference. Three local merchants got together and offered 41 cents per pound for the blue ribbon 4-H fat steer; 40 cents per pound for the red ribbon winner; and 39 cents for the white. This was all arranged before the fair, without an auction sale. First place 4-H exhibits at the Greenlee County Fair in the clothing, electric, crafts, entomology, geology, and foods projects were sent to the Arizona State Fair.

On October 10, the county agent met with a senior Boy Scout troop, at the request of the LDS Church, and presented merit badges on Conservation and Forestry accomplishments.

### III. Statement of County Situation

Bureau of the Census figures indicated a decrease in rural population in Greenlee County from 6030 in 1940 to 2798 in 1950 and an increase in urban population from 2668 in 1940 to 10,007 in 1950. From 1950 to 1959 the county suffered a general decrease in population from about 12,800 to 11,500. Both the urban and the full-time farmer populations decreased during this latter period, but there was a steady movement of urban people toward rural non-farm units.

A census survey made during the latter part of 1959 indicated a total of only 140 farms and ranches in the entire county as compared to 158 five years earlier. There are also about 125 rural non-farm families living in the country on small acreages but earning their livelihood from industrial, business, professional, and other non-farm work.

The Phelps Dodge Corporation with its mine, mill, smelter, mercantile, and related operations employs most of the working people in Greenlee County. This organization operates the second largest open pit copper mine in the world at Morenci, just six miles from Clifton, the county seat.

Of the 11,500 people in Greenlee County about 6000 are males and 5500 are females. Of the total figure, only one and one half percent are Indian, less than one percent negro, and nearly fifty percent are people with Spanish surnames. Greenlee is the second highest county in Arizona in Mexican-American population, running close to Santa Cruz with 56.5 percent. This is the result of mining companies in the Clifton-Morenci area, many years ago, importing hundreds of workers from the interior of Mexico.

With favorable educational and economic opportunities existing in the county during the past half century, large percentages of Mexican-American people have not depressed the median of school years completed. In fact, the sheer numbers of these people in some localities appear to have elevated them economically and educationally on a par with the rest of the population.

A survey by the Arizona State Employment Service in 1957 indicates 300 people in the county employed in farming and ranching; 300 in manufacturing; 2500 in mining; 100 in construction; 100 in transportation, communications, and public utilities; 200 in wholesale and retail trade; 800 in service work; and 200 in government work.

## B. Agricultural Situation

Greenlee County has a land area of approximately 1,199,360 acres, of which 5,588 acres are cropped. Of this cropped land, nearly all is irrigated. About 5,155 acres are irrigated by ground water, 290 acres from surface water, and the balance is irrigated by a combination of surface and ground water. Thirty two farms get water from farmer-owned irrigation organizations, but of these farms only seven get all their water from these organizations.

The crop farms in Greenlee County are small, and most have been family-supporting units in the past. The full-time ranch operator generally has from 25 to 100 sections of grazing land or a minimum of 200 brood cows. Of these farms and ranches, a survey in 1960 showed 82 were operated by owners, 50 by part owners, and 8 by tenants.

Sizes of irrigated farms, as of 1960 in Greenlee County, are indicated below. This is based on a \$250 minimum production. Full-time farm operators usually handle from 100 to 350 acres of farm land.

1 - 9 acres	29 farms
10 - 19 acres	17 farms
20 - 29 acres	10 farms
30 - 49 acres	13 farms
50 - 90 acres	11 farms
100 - 199 acres	13 farms
200 - 499 acres	9 farms

Production of cattle and cotton are the two major agricultural enterprises in Greenlee County. Principal farm crops are cotton, alfalfa, grain sorghum, barley, and corn. Some vegetables are grown commercially, but most are marketed locally. Range cattle operations vary from a few head to over 1000 head of breeding stock.

Although cotton is still the principal cash crop produced in the farming area, acreages have decreased about fifty percent during the past fifteen years due to government controls, restrictions, and incentives. Grain, forage, and livestock projects have supplemented much of the cotton acreage. About 1700 acres of cotton were produced in 1961 by about 100 growers, most of whom had less than 25 acres. Since Greenlee County is located on the margin of the cotton belt, only short season varieties can be produced. As a result of this, only one variety is grown in the county. It is New Mexico 1517 C short staple and of generally excellent quality. A new strain - New Mexico 1517 D - is being tried by some growers at the present time. All cotton lint is sold through El Paso, Texas markets, with most of the seed going to New Mexico oil seed processing plants. The isolation of the area and the single variety produced have created a special demand for Duncan Basin cotton which generally brings premium prices. Despite the favorable market, however, increasing controls, costs, quarantine regulations, and incentives have discouraged some of the smaller growers who have turned to other, less profitable enterprises.

## B. Agricultural Situation (Continued)

Acreage yields of cotton in Greenlee County are generally about  $1\frac{1}{2}$  to 2 bales. Alfalfa generally produces about 5 tons per acre, grain sorghum about 2 to  $2\frac{1}{2}$  tons per acre, barley about  $1\frac{1}{2}$  to 2 tons per acre, and corn about 35 bushels per acre.

Greenlee County has enjoyed good livestock market outlets. Ranchers customarily contract their cattle to buyers and feeders, though there has been a recent trend toward consignment of feeder animals direct to commission firms, auction rings, and packer buyers. Fat animals are generally shipped to packing houses at Safford, Phoenix, or Los Angeles. Cattle feeding in Greenlee County is practiced sporadically when market conditions and feed supplies will justify the risk involved.

Census reports indicate that Greenlee County cattle sales during the past year amounted to about one million dollars as compared to about 510 thousand dollars for cotton sales. Relatively few cattle were fed out through feed lots in the Duncan Valley in 1961.

Grain and forage crops are generally fed or marketed locally. Most vegetables, with the exception of melons, are marketed locally. There are only a few family size poultry flocks in the county and two dairy farms. One dairy maintains over 300 cows in lactation throughout the year while the other averages about 30 or 35. All locally produced milk is shipped to Tucson for processing and marketing.

The most general problems of the agricultural people involve assistance with farm and home management, family living, as well as cultural and economic problems.

### C. Home Economics Situation

Bureau of the Census figures for 1959 indicate the population of Greenlee County to be roughly 11,500 which is a decrease of 1300 since 1950. Estimates based on these figures would break down this population figure as follows:

	<u>Population</u>	<u>No. of Families</u>
Urban	9163	3825
Rural Non-farm	1875	600
Farm	462	125

The present trend is toward a slow but steady movement of urban people toward small acreages in the country. This has resulted in many of the once family size farms being sub-divided into smaller units. A recent survey indicates that only about 100 families in Greenlee County earn their entire livelihood from farming and ranching alone as compared to about 5000 who are in industrial, business, and other non-farm professions. There are presently about 115 families living on small acreages in the country, but earning their living from other sources. Less than half of these residences can qualify as farms in accordance with the Bureau of the Census definition for 1959.

Most of the families in the county are dependent, either directly or indirectly, upon the operation of one large copper mine and its related activities for their income.

The U. S. Department of Commerce "Sales Management Survey of Buying Power", May 10, 1957 indicates that Greenlee County has the highest per capita income of any county in Arizona. Despite this favorable income situation, however, there are fluctuations in the copper industry caused by strikes, reductions in force, etc. that have a direct effect upon family living and stability.

Most families need to be aware that there is need for a back log or savings of some kind to meet these situations. They also need to know how to effect household savings, how to utilize lower cost foods, and how to better manage the home to meet these emergencies.

Some of the long time improvements that need to be brought about in the county are:

1. General improvement of homes and home facilities.
2. Improved sewage disposal systems for country homes.
3. Improved health and sanitation program for the county.
4. Rural Areas Development for the Duncan Valley which will result in more job opportunities and increased income.

Conditions that keep people from bringing about the above changes are:

1. Instability of families and insecurity of family income.
2. Lack of knowledge of the advantages of improved living conditions through improved facilities and home management.
3. Lack of incentive and inspiration to get things started.
4. Lack of funds or improper budgeting.
5. Lack of motivation and leadership.

#### D. County Youth Phase

There are four established 4-H Community Clubs in the county located at Duncan, York, Morenci, and Clifton. All of these clubs are mixed groups made up of both boys and girls carrying a wide variety of projects. Of a total county population of 11,500, enrollment in 4-H generally runs between 120 and 140.

Other active youth groups in the county include Future Farmers of America, Future Homemakers of America, Future Teachers of America, Boy Scouts, Girl Scouts, Junior Sportsmen, and several church youth organizations.

It is estimated that there are presently about 9000 urban people in the county and about 1875 rural non-farm and 462 farm people. A recent county survey indicated that there were only about 100 families in the county earning their living from agriculture alone and about the same number of part-time farmers who earned most of their income from other sources.

The 1950 census indicated a total of 6654 males and 6161 females. The 1959 census showed an overall decrease of 1300 in the population since 1950, but it is assumed that the proportion of males to females remains about the same as in 1950.

There are three excellent school systems in the county located at Clifton, Morenci, and Duncan, where most of the county's population is centered. Each of these systems has elementary and high schools and very good teaching facilities. One small country grade school exists in a rather isolated community in the Upper Blue valley. A state junior college is located at Thatcher, just forty miles from Duncan.

Community life and recreation center about the churches and schools. Recreational facilities are limited mainly to those in these groups, except for the community 4-H Clubs. All schools and some churches are provided with gymnasium and outdoor sports equipment.

Some of the 4-H leaders are well established, enthusiastic, and capable, while others are new, inexperienced, and lack training. One leader has led the same club in Greenlee County for nearly 20 years, while another leader has been an assistant state 4-H Club leader in another state.

Since most of the working people in the county are employed by industry or its related activities, strikes and other emergencies are not uncommon, and may have a direct effect on youth development and family living.



## Organizations

There is no organization sponsoring Agricultural Extension Work in the county. The only active organized farm group in Greenlee County is the Greenlee County Cattlemen's Association.

Some of the more active county organizations are as follows:

County 4-H Council

Community 4-H Clubs: Duncan, York, Clifton, and Morenci

County Homemakers Council

Community Homemakers Clubs: Duncan, York, Clifton, Coronado, Morenci,  
and Plantsite

P. T. A.: Duncan and Clifton

Greenlee County Fair Commission

Greenlee County Cattlemen's Association

Greenlee County Cowbelles

Blue Cowbelles

Woman's Clubs: Duncan, Clifton, and Morenci

Garden Clubs: Stargo, Morenci

American Legion: Duncan, Clifton, and Morenci

Greenlee County Chamber of Commerce

Rotary International: Duncan, Clifton-Morenci

Kiwanis: Clifton

Lions: Morenci

Elks Lodge: Clifton

I. O. O. F. Lodge: Clifton

W. O. W. Lodge: Morenci

Masonic Lodge: Duncan, Clifton

Coronado Sportsman's Club: Clifton

Boys Scouts: Duncan, Clifton, Morenci

Girls Scouts: Clifton, Morenci

U. S. Forest Service; Clifton

A. S. C. S: Duncan

S. C. S. District: Duncan

Duncan Valley T. V. Association: Duncan

Business and Professional Women's Club: Clifton

## Newspapers

The Copper Era, weekly, is published in an adjoining county for Greenlee County distribution. Distribution includes most homes in Greenlee County. Mining news and Clifton-Morenci locals are given precedence over other coverage.

## T. V. Reception

Cable service, Clifton-Morenci area, \$90 installation + \$5 monthly charge.

Translator station, Duncan - Brings in one Tucson channel only.

## Banks

One each in Duncan, Clifton, and Morenci.

## Towns, Schools, Churches

There are three high schools in Greenlee County, one located at Duncan in the farming area; one at Clifton, the county seat; and one at Morenci, a large mining settlement. Each of these schools is accompanied by conveniently located grade schools, and one small country grade school still exists in a rather isolated community in the upper Blue Valley.

The only incorporated towns in Greenlee County are Duncan (elevation 3643 and a population of 930, 1950 census) and Clifton (elevation 3440 and population of 3451, 1950 census). A large mining settlement at Morenci, with excellent shopping and recreational facilities, also exists about six miles from Clifton. It has an estimated population of 6,549 and an elevation of approximately 5,000 feet.

There are other small, rural communities scattered throughout the county known as Franklin, Luntville, Sheldon, York, Eagle, and Blue.

There are churches of many denominations within the three largest communities, as well as a number of service, social, civic, ethnic, and other organizations.

## Irrigation and Water

Of the 1,199,360 acre area of Greenlee County only about 6,000 are in cultivation, nearly all of this being under irrigation. Less than five percent of the county is privately owned, the rest being State and Federal Lands, most of which is leased to ranchers for grazing purposes.

Almost all of the irrigated farming in the county is confined to the Gila River Valley in the Duncan basin. The Duncan basin is known as part of a natural structural trough that extends northwest from the vicinity of Lordsburg, New Mexico to the vicinity of Guthrie, Arizona. The Gila River enters this trough about ten miles east of the Town of Duncan and flows northwest through the lower end of the trough. The eastern margin of the Duncan basin is set arbitrarily at the Arizona-New Mexico State Line, and the basin terminates on the west about a mile upstream from the junction of the Gila and San Francisco Rivers. The basin is enclosed by the Steeple Rock Mountains on the northeast and the Peloncillo Mountains on the southwest. These mountain ranges effectively confine ground water within the sedimentary materials of the Duncan basin. The basin is approximately 37 miles long and varies from 5 to 9 miles in width, having a drainage area of approximately 680 square miles.

Both mountain ranges bordering the basin are of volcanic origin and are made up of low permeability rock. Likewise, the floor of the basin under the Recent Alluvium is of low permeability silt and clay. Wells in the basin average about 90 feet in depth, which also represents the depth of the Recent Alluvium from which nearly all water is pumped.

Since both ground water and surface water tend to flow toward the river, heavy pumpage has less effect on wells that are closest to the river.

## Irrigation and Water (Continued)

Ground water analysis from the Duncan basin show ranges in total solids from 250 to 5,000 parts per million. The higher concentrations generally are found in wells nearest the upstream end of the basin.

Prolonged use of the higher mineralized irrigation waters has, in some cases, indicated damage to the land, but where these waters are used alternately with surface water from the Gila River this damage has been avoided.

Areas of higher water mineralization are associated with faults which permit upward seepage of water from the older alluvium or seepage from old lake beds. In general, higher concentrations of fluoride ranging from 1 to 9.6 parts per million are associated with higher concentrations of dissolved solids.

Recharge of the basin occurs principally by seepage from canals and irrigated fields, underflow at the state line, underflow from tributary washes, seepage from the Gila River, rainfall on the valley floor, and seepage from older alluvium.

Discharge from the basin is by surface flow and underflow, pumpage, evaporation, and transpiration of plant life.

According to studies made by the U. S. Geological Survey Department, re-charge-discharge relationships between flow in the Gila River and ground water in the Recent Alluvium appear to be in a state of dynamic equilibrium.

### Problems:

(a) The present existence of agriculture and life in general in the Duncan basin, as well as future expansion of the area, is apparently dependent upon the available water supply within the basin. For these reasons we should be looking towards methods of increasing or conserving this water supply by: (1) lining canals and ditches and (2) replacing non-beneficial vegetation by other plant growth that will hold the soil in place, yet use less water.

(b) Determining areas and wells with lower fluoride and other mineral concentrations to prevent detrimental effects on the teeth and health of children and livestock.

(c) Exploration for artesian water in the center of the valley by drilling deep test holes, possibly to bed rock. The Geological Survey studies indicate that the presence of clay beds along the axis of the valley suggests the possibility of artesian aquifers or water bearing sands within or below the old lake beds under the Recent Alluvium.

(d) Leveling of farm lands to reduce excessive slopes and improve water penetration.

## Irrigation and Water (Continued)

Local records indicate that irrigation has been practiced in the Duncan basin for nearly a hundred years. Crude diversion dams were originally constructed at various sites across the Gila River, and the water was channeled off through man-made canal systems to irrigate fields within the basin. Dams were constructed of river sand, cable and brush, or rock and concrete; and ownership of dams and canals was claimed by those whom they served. Later, wells and pumps were located along these canals for the supplemental watering of crops when the river was dry. Within more recent years, all but three of these canal systems have been abandoned in favor of individual, farmer-owned wells. This dependence on pump water alone may, in time, create soil problems in some areas. Where solids in pump water are allowed to accumulate in the soil without low concentration river water to leach them down, detrimental effects to certain growing crops may become apparent.

A small amount of irrigation is practiced some years along the Blue and Eagle Rivers in central and northern Greenlee County. This sporadic type of irrigation is used to supplement rainfall during periods of drouth. Approximately 300 acres of forage, cereal crops, and fruits are grown in these areas with natural rainfall and water pumped from the rivers.

Water used by industry in Greenlee County (mining, milling, and smelting) approximates the same amount as used for agriculture in the Duncan basin. Expansion of these operations is dependent on locating more adequate and economical water supplies. The present water supply for industry is pumped from wells near Eagle Creek and Black River, transported through a 26 mile system of canals, tunnels, siphon tubes, pumps and over-land pipes with a resultant loss of over 50 percent. Where ever possible, water used in these operations is reclaimed and reused.

Without exception, water is presently the limiting factor in both industrial and agricultural expansion.