

FOURTH
ANNUAL REPORT OF THE
COUNTY AGENT WORK IN GRAMAM AND GREENLEE
COUNTIES.

PERIOD FROM DECEMBER FIRST, 1918, to
December First, 1919.

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I.

FARM BUREAU AND OTHER ORGANIZATIONS.

History of Farm Bureau, or the Farm Improvement Association.

As stated in the previous reports the first farmers organization that had directly to do with the County Agent work was known as the Farm Improvement Association and was organized or partly organized by Stanley F. Morse who was then Extension Director and County Agent Leader. Prof. Morse who was by the way a splendid executive and a great friend to the common people of Arizona - believed that it was best to work thru a group of the leaders in any community and operated in that way. The Farm Bureau movement in 1916 was a comparatively new type of organization and the methods of effective operation had not been carefully worked out. The Farm Improvement Association or F.I.A. as it was known was patterned after what was then known as the Farm Bureau, but was given a different nomenclature only because it was desired to give it local color. The way in which this organization was used was to hold meetings much after the idea of the old Farmers Institutes every month or so often, but with the difference that the speakers were confined to the County Agent and the Extension Specialists, with an occasional farmer who was invited to speak on a definite subject. At these meetings attempts were made to organize and carry our regular project matter, but the people had probably conceived the idea that they were to hold regular meetings and to discuss farm problems. At any rate it kept all of the County Agents pretty busy meeting with the farmers at these stated periods.

Remodeling of the F. I. A. into the Farm Bureau.

Since the inception of the Farm Improvement Association in the early part of 1916, the only changes which have been made were in the early part of 1918 when the name of the organization was changed to the Farm Bureau and the locals were done away with and the local presidents were made the local chairmen - membership being made in the County Farm Bureau instead of the X local. Another change has been made in the policy toward the organization by the Agent and that is the placing of more responsibility on the committees.

Present officers. George H. Killian of Thatcher, is president and Charles Matthews of Glenbar is Secretary-Treasurer.

Organization work in 1919.

During the current year the following movements have had considerable time spent on them and some promise is held out for results in the future which will be well worth while.

The Safford Valley Products Co., of Safford, Arizona. Business is confined to marketing produce - mostly hay - and the purchase of machinery, twine and farm supplies generally with one department especially for the purchase and sale of groceries in wholesale lots.

W. H. John of Safford is manager.

The InterState Milling Co., a corporation of Duncan, Arizona. Their chief business is the purchase of wheat, barley and corn and their manufacture into flour, rolled barley, and corn products. Business is on cash basis and is both wholesale and to their patrons - retail.

John B. Jones of Duncan, is manager.

The Gila Valley Water Users Association - chief place of Business Safford and Pima, Arizona. Philo C. Merrill of Pima, is Secretary.

The chief business of this association is to devise plans and means for the establishment of a modern irrigation system including the irrigation of an additional 70,000 acres of new land. Their business is also to carry this plan into effect and to aid in the getting of Congress to undertake the control of the flood waters of the *Gila*.

ORGANIZATION WORK.

Safford Valley Products Co.

History. After the collapse of the Gila Valley Farmers Exchange certain of the farmers in the Valley and the former manager of the Exchange were determined not to let the idea of a farmers selling organization, die. At the time of the County Agents attempt to re-finance the Exchange there had been subscribed something in the neighborhood of \$10,000 conditioned on the raising of \$15,000 as the minimum amount necessary. Since the minimum was not raised the men who had subscribed the above amount said that they would go ahead and organize a new selling organization.

Thru February and March, the County Agent cooperated in arranging meetings and in helping to shape the policies and management. On March 19th, the men interested met and formally adopted the proposed constitution and by-laws. A manager was selected and set to work. The organization was incorporated and set to work to find a market for the hay of the Valley which was the principal aim of the organization.

Effect.

At the opening of the new season and before the regular dealers had become aware of the new organization, they had given out word that the opening price of hay would be not more than \$13.00 per ton f.o.b.

The manager of the Safford Valley Products Co. went quietly out to the River sections and sold a lot of hay at such a price that they could afford to pay \$15.00 per ton for the new cutting. On learning of this the regular dealers of course had to increase their stated price to the \$15.00 per ton. A little later on the Safford Valley Products manager secured an order for 100 cars of hay at such a price that they could afford to pay the farmer \$16.00 per ton. They went out and secured enough at the advanced price to fill the order or at least they thought they had. The regular dealers of course had to follow the raise in price and came around and made a proposition that they would agree not to raise or lower the price without consulting with the new organization or notifying them before hand, provided of course that they would reciprocate.

Since that time the new organization has been able to keep the price up and increasing so that at the time of this report the price is \$25.00 to \$27.00 per ton. In addition to this, they were able to sell several hundred tons of second and third class of hay away from the regular markets at a time when the regular dealers were trying to use this as an excuse for dropping the price.

A total of about 75,000 tons are marketed annually and it is not unfair to assume that the increase in price to the farmer has been in the neighborhood of \$5.00 per ton. The price of hay would undoubtedly have gone up but only after most of it in the Valley had been bought by the regular dealers. As it is they have bought several thousand tons and since they secured it, the price has advanced from \$20.00 to the present level.

At the above rate of \$5.00 per ton to the farmer the increase in the wealth of the farmer has been about \$375,000.

Interstate Milling Co.

This organization was the result of the activities of a farm bureau committee of the Richmond local. They have established a flour mill at Duncan, costing in the neighborhood of \$10,000. They are turning out a good product and the enterprise promises well. The County Agent was active only in that he was called in to help them solve some marketing problems and suggested that they appoint a committee to handle that and other buying and selling problems. The owners of the mill which is a cooperative affair, consult the Agent often.

Gila Valley Water Users Association.

History. When the present County Agent first came to the Valley he was impressed with the extreme hazard which the irrigators ran relative to their supply of water. Under the present system the different canals divert as much water as they want or can hold during the periods when there is an abundance in the river - provided their dams are still intact or capable of being made to hold the desired amount of water. When the water runs low as it does in May and at times all thru the summer then it is divided according to a decree of the court - the result of some years of litigation. This makes the supply for any crop more or less uncertain and as a result any garden stuff which requires water at short intervals is so unsafe that it is not grown to even the extent of supplying the home needs.

Again all thru the winter and spring and early fall there is an abundance of water running down the river that is not used. All of these things suggested to the Agent the advisability of storing some of the water and building a new high line canal. Investigation showed that it had probably occurred to all of the people of the Valley and one ~~at~~ attempt had been made to construct a canal running higher than those now in operation and which was designed to carry enough water to irrigate an additional 70,000 acres of ~~la~~ land. The county Agent took the matter up with some of the influential men in the valley soon after his arrival, but was discouraged and decided to let the matter rest for the time.

At the time of the Soldier settlement agitation the County Agent in company with others took up the question of reclamation with ~~xxx~~ the senators and representative in Congress. A parallel movement was started in the meantime by others interested in the development of the Valley along the lines of protecting the lands already under cultivation from the inroads of the Gila River which had already washed away in the neighborhood of 15,000 acres of bottom land of the first quality. This movement was enabled to proceed by reason of the former activities of the old water users assn. which had sent a delegation of men to congress and who had secured an appropriation of \$10,000 from congress to defray the expenses of an engineering report of the possibilities of controlling the floods of the Gila. This money was spent and a report was prepared for the Sec. of the Interior by Mr. Olmstead and which is now printed as Senate Document No. of the Congress, entitled "Gila River Flood Control" and commonly known as the Olmstead Report.

Outline of Project. The Hon. Geo. H. Maxwell, who had been largely responsible for the getting of the Salt River Project or the Roosevelt Dam, interested Andrew Kimball in the report and together they planned a State wide campaign to get thru several projects for the development of the State of Arizona. Among other things they planned a campaign to secure the favorable action of Congress in authorizing the execution of the Olmstead report for the flood control of the Gila River and a mammoth project contemplating a gigantic dam across the Colorado some three hundred feet in height so as to raise the waters of that stream to the 1000 ft contour and take them across the country and impound them in what is known as the Sentinel Dam reservoir. This project contemplates the irrigation of two or three million acres of land in Arizona and a similar amount in Imperial Valley. Also the development of an immense amount of electric power.

That portion concerned with the Gila River Contemplates the regulation of the Gila River as provided in the Olmstead Report. The building of a high line in Graham County to irrigate some 70,000 acres additional land together with suitable diversion dams, a regulating reservoir (the latter the County Agents idea) and power plants to utilize the opportunities which will be developed.

The program at first planned and partly carried out practically ignored the County Agent. However when Mr

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Maxwell got on the ground his influence together with a demand on the part of the farmers gave him a definite place in the work, so that when the election of officers finally took place he was selected Vice-President of the organization.

The plan for the Valley in Graham County contemplated the organization of all of the land and irrigators in the project now under cultivation or to be under irrigation by means of the land to be reclaimed, into the Gila Valley Water Users Association. The plan is to raise sufficient funds to enable a complete survey of the system to be made together with estimates of the cost and plans for the diversion dams, and power plants, as well as the distributing system.

The organization was and is therefore the first problem. Two series of meetings have been held over the County and one in Clifton and one in Puncan. The County Agent has taken part in or fully arranged a total of 21 meetings.

The first series of these secured the organization of a temporary organization known as the Water Users Assn, comprising the presidents and directors of the various canals. Thru the medium of these the second series was held together with the activities of the Farm Bureau officers and the County Agent's advertizing. The second series resulted in the organization of the permanent association after the first organization had provided funds to bring Judge Kibby over from Phoenix to draw up the articles of association and incorporation. All of this work was accomplished by the 21st of May. and Further work on the project was discontinued at that time to be taken up in August. Since August Mr. Maxwell together with some of the farmers in the lower part of the Valley have signed up about 10,000 acres of land and the owners have pledged themselves to pay twenty-five cents per acre per year for five years to further the work.

At the present time a plan is being carried out to complete the signing up of the land not yet secured.

Clifton Marketing Project.

An oral arrangement was entered into this year by which the County Agricultural Agent and the Home Demonstration Agent were to cooperate in the supplying of the Clifton Market with fruits and vegetables grown by the farmers in the two counties of Graham & Greenlee. Three factors operated to defeat or to postpone the successful carrying out of the project. First the lack of transportation facilities which it was hoped to overcome by securing the establishment of a motor truck route from Safford to Clifton operated by the Post Office Dept. secondly due to the unsettled conditions in Clifton and Morenci plantings of vegetables in the Duncan market gardening section were largely curtailed. Thirdly the Home Demonstration Agent was transferred to Maricopa County. The undertaking was probably a little premature as the amount of garden stuff grown is limited and the present supply of labor is inadequate to produce considerable quantities of garden truck.

II.

PROGRAMME OF WORK IN AGRICULTURE.

At the begining of the year the following programme of work was outlined and undertaken.

1. In cooperation with the U.S. Biological Survey, the campaign to exterminate the Prairie Dogs in the Sulphur Springs Valley lying in Graham County. Also a preliminary campaign to eradicate Gophers in the irrigated section. It is thus phrased because there was considerable prejudice against the movement.

2. Continue the orchard work already undertaken in previous years and add one or two demonstrations on the Control of the Codling moth work in Greenlee County.

3. To run a series of corn demonstrations to determine or to learn the relative values of corn in the two counties as well as to find out relative silage properties of the different varieties.

4. Variety tests and yield data on cotton as basis for campaign of increase in acreage.

5. Follow up drainage work.

6. Hold Fair In Greenlee County.

7. Increased production of Poultry & Eggs.

8. Miscellaneous work in Deef Feeding.

9. Miscellaneous Special work, consisting of emergency calls for insect control work, plant disease work and other things which can not be forseen.

After the years work became well started the organization work described in the work listed under Organization, came up and it was necessary to make a place for each one of the subdivisions. This special work was as follows:

Organization Safford Valley Products Co.

Organization Gila Valley Water Users Association.

Clifton Marketing Project.

III. MAJOR PROJECTS. PRAIRIE DOG & RODENT CONTROL.

Cooperating Parties. Mr. Karl Fisher, Rodent Specialist, representing the U. S. Biological Survey under the Direction of D. A. Gilchrist, Rodent Specialist, and of course the County Agent.

Plan.

The work was based on the distribution of the Strychnine alkaloid provided for in State and Federal appropriations. It consisted of two phases. First the extermination of the prairie dogs in the grazing sections of the County and secondly the killing of the gophers and other rodents in the Irrigate Valleys in Graham & Greenlee Counties.

In the first work the Biological Survey agreed to furnish out of the State Appropriations, Strychnine enough to poison the prairie dog on one section of land for each cooperating stockman. Also to furnish a Specialist under whose direction the work was to be done. The poison and other materials for ~~the~~ the rest of the work of each man's over the section, it offered to furnish ~~him~~ at cost. The County Agent was to help organize and supervise the work in his County and render such additional aid as possible.

In the second work the Biological Survey furnished poison for the killing of the gophers and other rodents to the extent of enough for the contemplated demonstrations and agreed to furnish any additional at cost, for the farmers in Graham County. In Greenlee County because there was no prairie dog work to be done there, the poison was to be furnish to the Farmers to the extent of enough to cover 4000 acres at the rate on which infestation was figured. This was to be done without cost to them and the County Agent was to do all of the work himself.

Situation in Sulphur Springs Valley.

There was an infested area in the portion lying in Graham County of about 200 sections of land. Over this area about five large cattle outfits range their stock. Two or three of them had done some work in previous years in cooperation with the Biological survey so did not have to be converted to it. Outside of these most of the affected territory consisted of small holdings of homesteaders - about a half of whom were not on their ranches but were scattered from Alabama and Georgia to California. Of those remaining there was a lack of cohesion due mostly to a sectional difference of origin, part coming from Texas and Oklahoma and the rest from the northern and western states. The County Agent had tried to get the two divisions together on similar work previously and while they could agree on the necessity of getting rid of the dogs, they could not agree on a person or persons to head the movement. On this account it was deemed advisable by the County Agent and Mr. Fisher in consultation not to attempt to handle the work this year as recommended but to conduct individual demonstrations as to the placing of the bait and poison and to mix the poison and distribute it as needed.

Execution. On the County Agent's first trip into the Lompoc-Watson district in the first week in January, he found Mr. Fisher already at work with the Hooker Ranch and Kennedy Ranch people. On consultation with him the plans were laid down and work was started. The County Agent and Mr. Fisher went to Willcox and brought out the necessary poison and rolled barley. Then a trip was made around to the different ranches and the dates on which they would use the bait and the poison were determined and set down. Then each man's order for bait and the poison barley were taken, and the date for delivery of each was given. The men agreed to put the bait out as prescribed and to follow it up at the stated interval with the poisoned rolled barley.

Formula used was that recommended and adopted by the Biological Survey for this work in Arizona.

Distributing the Bait and poison. On the dates determined the bait was taken to each ranch and the owner was shown how to place it at the holes of the dogs.

Two days later the poisoned barley was distributed and the work of the preceeding two days was checked up. Subh additional information was given on these visits as was found necessary and the rancher was duly cautioned to be careful in storing the poisoned grain.

In all 34 demonstrators received the poisoned grain and a total of 87 sections or ~~55680~~ acres were gone over. See map.

Results.

Where the work was done under the repeated checking up of Mr. Fisher it was around 90 per cent effective. On the areas on which the owners were away Mr. Fisher either did the work of putting the poison out himself or got it done by the interested neighbors.

On the small ranches where the owners were interested in putting it out, most of them kept it so that at this date of writing there are very few dogs apparant. On the larger areas and where there was no one to follow it up during the summer the remaining dogs have multiplied marvelously and it will require nearly as much effort to eradicate them this coming winter as it took last winter.

The chief fault in all of the work seems to lie in the abandonment of the work during the summer. If the large area worked over in the winter had been followed up during the summer by repeated poisonings or with carbon disulphide, that section of the land would be completely free. and one more year's work would have eradicated all of the dogs in Graham County.

One word should be said in commendation of the work of Mr. Karl Fisher who did all of the work in Graham County except a few sections which Mr. Lewis of the same service had charge of. Thru the summer many voluntary statements were made to the County Agent relative to his thoroughness and general capability. He was certainly well liked by the ranchers with whom he worked.

Value of the work.

It has been roughly estimated that it requires 20 acres of range for one cow. In the district treated the carrying capacity of the range had been reduced to at least 50 % of normal. If the increased grass on each section would carry enough additional cows to produce ten additional yearlings, annually the total value of the work would have been something over \$26,000 if it had been 100 % effective. If it was 50% effective then we may say that the actual value of the work done was or is easily worth \$13,000. This amount is undoubtedly less than the actual benefits received.

GOPHER AND OTHER RODENT CONTROL.

Situation.

Thruout the irrigated sections of the Gila Valleys gophers are more or less of a nuisance especially along the banks of canals and ditches often causing more or less disastrous breaks and often in irrigated fields bordering a bank, causing deep gulleying of the land, ultimately making it impossible to either water or otherwise cultivate the field. It was thought that the proposed movement would meet with favor in practically all quarters. However at the outset it received a check on being presented to the president of the farm Bureau who could not see any merit in the move.

Plan

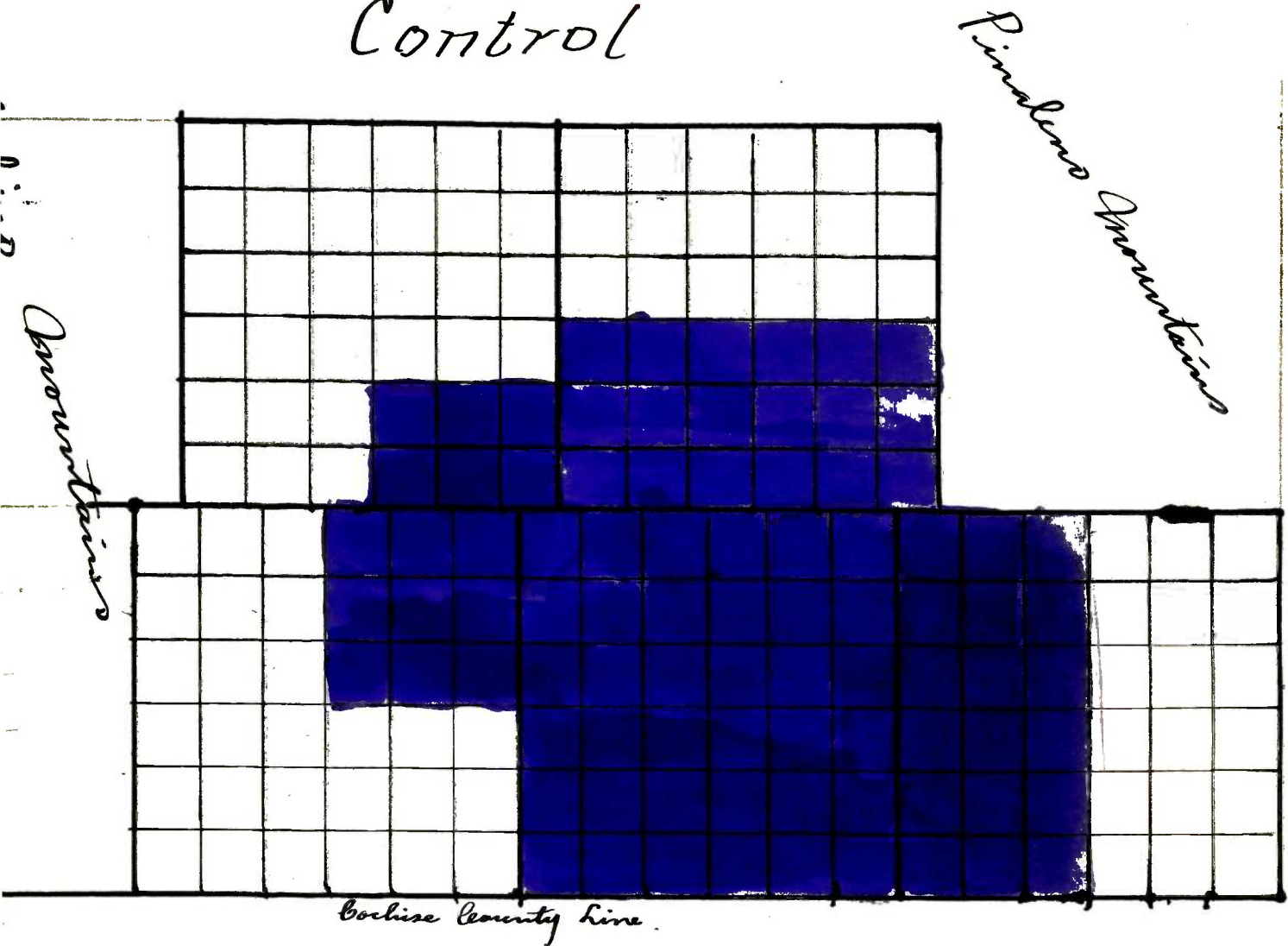
Never the less the original plan which called for demonstrations in each of the towns and the distribution of the poisoned rolled barley was proceeded with.

Execution.

At advertized meetings in each town in the Valleys, two were held in most of them- the use of the poison was explained along with the cautions to be observed and the poison was distributed

Prairie Dog

Control



Colored Portion Shows Approximate Area Covered.

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poison itself was distributed. Appointments were made for the next day on some one or more farms at which place the County Agent gave a demonstration of how to locate the runs and use the poison.

Results.

A total of 189 quarts were distributed to 51 men who signed the release cards. All of this was used on ~~xx~~ gophers working in fields and along canal banks. Not all of the men reported results but in each case which the County Agent investigated himself effective work was done and in no instance which came under the Agent's observation were there any failures.

It is difficult to estimate the total acreage on which this was used as many men who got two or three quarts found this ample to kill the gophers on 40 to 80 acres of land. In another instance 12 quarts were distributed under the direct supervision of the County Agent on three acres of land. This land represented a fairly dense population of the Gophers and the mounds made it almost impossible to mow the alfalfa. The work was so effective that only two mounds near the edges of the field could be found on a visit later in the summer.

In addition to the amount above recorded considerable more was distributed under the direct supervision of the Agent.

Six men furnished statements to the agent that the value of the work totalled to them \$515.00

Rats, Mice & Squirrels exterminated.

In one community a call was made for help in stopping the depredations of rats, mice and squirrels on the truck which had been planted and which threatened the community with a total loss of this source of revenue. The County Agent responded by taking a lot of the prairie dog poisoned barley out there and showing the farmers how to use it. Thirteen growers received something in the neighborhood of 100 quarts of the poison. Four of these men furnished statements showing the treatment to have been worth to them \$400.00.

The men in meeting assembled said that the work saved the community at the very least \$2,000.00

Rabbits.

Later the rabbits kept coming in these same fields and in an effort to relieve this trouble the Agent mixed a bunch of alfalfa leaves with the alkaloid strychnine in the proportions and according to the formula recommended by the biological survey for the sulphate of strychnia for poisoning rabbits. This was distributed among seven of the growers and reports asked. All found one or two rabbits but with the exception of one grower, their opinion was that with the amount of green stuff present around their fields that it was useless to expect any results so late in the year as this was done in the latter part of June. The other grower did not have any green stuff around his truck patch, nor was there any within a half mile of it. He found about a dozen rabbits in and near his field and had no more trouble with them.

Future work in the district where the rats, squirrels and rabbits did so much damage, will be taken up this winter and an effort made to rid the community of the pests. There is a great amount of brush present and it will take quite a thorough campaign to reduce the loss to the vanishing point.

A Farm Bureau Committeeman handled all of the local work pertaining to the work in exterminating the rats, Squirrels and rabbits.

COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
STATE OF ARIZONA.

University of Arizona,
U.S. Dep't. of Agriculture,
Graham & Greenlee Counties
& County Farm Bureaus,
Cooperating.

EXTENSION SERVICE?

COUNTY AGENT WORK.

Headquarters, Thatcher, Arizona.

Project Better ORCHARDS.

Leader A.B. Ballantyne, County Agricultural Agent.

Location Towns of Thatcher, Safford, Central, Pima,
Fairview, Duncan and Ft. Grant and in any other
locality where opportunity offers.

Legal Authority Federal Smith-Lever Funds, Appropriations
from the State and Counties and special allotment
from the States Relations Service.

Object To show the proper ways of pruning and caring
for young orchards. To show the advantage of
properly pruning and spraying old orchards.
To show the proper method of picking and storing
apples. To encourage planting of adapted varieties.

Situation At the present time the old orchards contain
numerous trees that are either useless on account of
being ill adapted or diseased, or so injured on
account of unintelligent pruning and care as to
be sources of expense instead of revenue to their
owners. Young orchards and vineyards are not
being planted largely on account of the lack of
skilled help which the County Agent has not offered
before because of the activities of the Commission
of Agriculture and Horticulture and their agents.
Considerable reluctance was felt by the County
Agent in invading the field which was claimed by
the officials attached to this commission. In the
three years which have elapsed since the County Agent
entered the County no work on the lines contemplated
in this project has been done by the representatives
of the State Commission of Agriculture and Horticulture
so that it seems that no logical objection can be raised
by them to this work being done as a project, by the
County Agricultural Agent.

History During each of the years past Pruning demonstrations
have been given under the County Agents direction.
On his first visit to Ft. Grant the then Superintendent
Mr. Pullian asked him to prune the young orchard just
set out and to offer suggestions as to its care. This
was done. Each succeeding Superintendent has likewise
solicited his suggestions and he has had charge of the
pruning of each of the orchards. Likewise in Pima and
Thatcher and in several other places young orchards and
vineyards have been placed largely under the direction
of the County Agent and he has been asked to look after
the pruning of them. In Greenlee County likewise he has
been asked to offer many suggestions in the care of
trees and has pruned or has suggested the methods of
pruning several of them. In the past no records have
been kept on these orchards and so results have not been
easily measured. It is now proposed to remedy this.

Plan The encouraging by publicity and private work of
additional plantings of small orchards to solid varieties
and the proper care and pruning of these young orchards
and vineyards. This will include the continuation of
the care now being given to orchards and vineyards

that have been under the care of the County Agent during the past three years.

The pruning and spraying of orchards not now under the care of the Com. of Agr. & Hort., and the pruning of peach orchards for better fruit.

The storage of apples and time of picking. At the present time fall apples are permitted to ripen on the tree and picking does not occur until a good part of the crop is on the ground. It is planned to pick some of the varieties at the proper time and place in a cool cellar or apple storage house. Then to secure samples of apples as picked by the growers and place them in the cellar and then to keep notes on the keeping qualities of the two lots of the different varieties. The aim is to provide ample and proper storage for apples to insure good storage until Jan. 30 if possible. Apples at the date of writing, Jan. 15th, are selling in the Valley at 12 to 25 cents per pound.

Methods of Procedure. Most of the work with orchards will of necessity be individual in its nature owing to the limited extent of the business of fruit growing and coupled with considerations for the Inspection Service of the Com. of Agr. & Hort. Pruning Demonstrations will be given in the orchards of demonstrators and if the Local Farm Bureau Committee desired it this will be made widely public and the Committee will be held responsible for the advertizing and arranging of it. Each demonstrator will be given written directions for the carrying out of the work as is deemed advisable.

In the spraying work & instructions of the mixing and spraying will be given and the other plans for the continuation of it will be worked out with each demonstrator.

The storing of apples will be worked out in cooperation with the owner of a good storage cellar who is living in Fletcher, and has the proper interest in the work.

Follow Up Work.

As the work comes around each demonstrator will be visited monthly or as often as is necessary to complete the work satisfactorily. Where the work in any town is under a Farm Bureau Committee, they will be asked to make the visits in conjunction with the County Agent and will be asked to keep a general outline of the progress of the work.

Publicity. As before suggested Pruning Demonstrations will be given where desired by the Local Committee of the Farm Bureau. In other places the pruning Demonstrations will be given to the parties interested. No attempt will be made to hold meetings for this purpose alone unless it is desirable to institute a packing school this fall.

Newspapers. From the nature of the work it will be desirable to publish only notes of the progress of the work and not to undertake a preliminary publicity campaign. The Valley Farm News will be used to make record of the notable achievements and articles of unusual interest will be given to the local weekly papers.

Records

A map of each orchard especially the young ones in which varieties are on trial, will be made and the different varieties will be located thereon. Accompanying this a history of it will be written and a general description of it and the soil appended.

Photographs will be taken and filed away for future

reference, with especial reference to those of young orchards, demonstrations, Etc.

Records shall be kept on cards 4 x 6 inches and the amount of work done at each visit recorded. The general treatment given and growth and yields made together with the quality of the fruit will be recorded. The time of blossom will be kept where advisable and the dates of killing frosts will be kept to discover if possible the positions in the two counties not favorable for fruit growing. Dates of irrigations and cultivations will also be kept.

Dates of work.

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BETTER ORCHARDS.

As per the forgoing project the work was divided into continued care of old orchards or those which had been looked after in the past, the encouraging of new plantings and their proper starting, the storage of apples, and the institution of pest control in the Stewart Orchard in Duncan.

Care of older orchards. The following orchards received attention from the Agent and in them his directions were carried out as far as they went. Eyring's vineyard in Pima. State Industrial School's two orchards. Mr. Thomas' orchard in Lompec. McDaniel Orchard in Duncan. Daniel's Orchard in Sheldon. Also ~~Thesaxler~~ Tyler orchard in Thatcher.

At the beginning of the year the Agent undertook to give directions and leave an outline which he thought would be carried out. Each orchard was visited at intervals thru the summer and when necessary suggestions were given. No attempt was made to look after all of the details of the management but the general policy of handling the orchard was decided on. No records were kept other than those made by the agent and no statement of returns was to be made.

Eyring Vineyard. Out standing features of the work were ~~the~~ as follows. At the Eyring Vineyard only part of the vines were treated as the agent directed, the rest being left as the owner had been accustomed to seeing them left in old Mexico. The county agent suggested in 1918 that all of the vines be trained up to the stump form and that posts be set at all of the vines and the vines trained as they grew. He also gave directions for the culture of them emphasizing the necessity of careful attention during the first three years. The owner followed his directions pretty closely and during the summer pruned the growing vines as he was shown tying them up faithfully as needed.

The results are shown in the accompanying photographs. The vines which were trained up and properly cared for during the first year yielded fairly good crops of grapes during their second year of growth. Those which had as good a start but which were not weeded as directed and which were not pruned and tied as they grew, would not average an eighteen inch growth and none of them bore the second year. Besides they were pruned to two shoots and these were tied together under the supposition that they would support each other and would not need the posts which the County Agent recommended. These will never be good vines unless some radical change is made in management while those given the requisite care will be strong & heavy yielders right from the start.

Industrial School

orchards. The third summer after planting the peaches and apricots yielded fairly heavy crops of splendid fruit. All of the trees are of splendid shape and good strength in spite of a heavy prevailing wind from the mountain which has had a tendency to make the trees grow all on one side. The apples plums and pears will probably bear in 1920.

The Tyler orchard is a 20 acre orchard just coming into bearing. The others with the exception of the McDaniel orchard are all family orchards. The McDaniel orchard has been under the care of the County Agent for three years and is now coming into heavy bearing. This year there was a good crop of stone fruits and next year it looks as tho there would be an abundance of apples. It covers about eight acres. These orchards total about 37 acres.

Young ORCHARDS.

Three young orchards embracing about 8 acres were set out, pruned and summer pruned under the direction of the County Agent. In addition to these there were numerous requests for help in pruning trees, selecting varieties and in otherwise caring for horticultural subjects.

Demonstrations

in Pruning. Seven such demonstrations were given at which people other than the interested owner were present.

STORING OF APPLES. Due to a misunderstanding the work in storage was not carried out.

Pest Control on
STEWART ORCHARD.

This is the only orchard in which a definite comprehensive plan was laid and followed out as wholly demonstrative of orchard care up to the

point of marketing.

History.

For several years previous Mr. Stewart has been waging a useless and a losing fight against a multitude of pests which swarmed over his trees. The Arizona Commission of Agriculture and Horticulture has had an inspector in the district but he was the best available and did not know much about orchard work from first hand experience, and did not receive much help from the field force of the commission. Mr. Stewart followed his directions in the preceding year (1917) and sprayed his trees with bordeaux and copperas to kill the codling moth, ~~and~~ brown mite and woolly aphids. In the summer of 1918 the County Agent heard that Mr. Stewart would like to see him and accordingly called on him and at his request undertook to help him. The orchard had just been sprayed with a mixture of distillate, crude oil, kerosene and some kresol in water - the whole being thoroughly agitated while spraying. This had been the last expiring gasp so to speak of the owner to kill the woolly aphids and any other pests which he might hit - not being cognizant of the presence of the red spider and brown mite.

On going thru the orchard the County Agent pointed out and by aid of a hand lens showed the owner the red spider and the brown mites together with some San Jose scale which was present. The County Agent on the request of the owner agreed to undertake the clearing out of the pests and proceeded to take stock of his equipment. The spray pump was found to be a small very inefficient barrel pump and the hose and connections leaked so badly that it was impossible to make a mist with the nozzle on the end of the heavy iron extension rod. This nozzle by the way sent the ~~the~~ spray straight out from the end of the rod.

Some time was spent in converting the owner to the necessity of getting a good outfit. The Agent recommended a small Bean sprayer and promised to get the prices for him. The Agent also gave Mr. Stewart a list of the necessary nozzles and other equipment - recommending very earnestly the scrapping of the extension rod and the getting of a brass lined bamboo rod. Mr. Stewart finally agreed to get all of the equipment and the agent left after promising to locate the spray materials. This he did immediately and sent a notification to Mr. Stewart. The latter was to notify the Agent of the arrival of the outfit.

The Agent called several times during the summer to see if the outfit had arrived but it did not do until too late to do anything that fall. When it did arrive it was found to be a cheap power pump and a length of good hose without any nozzles or rod or connections. All of it had come from one of the large mail order houses and only that which came had been ordered, as the owner explained that he did not feel justified in investing any more on account of the heavy expense which the orchard had put him to and from the fact that he had gotten nothing from it for several years.

Agreements. On this visit the County Agent sat down with the owner and drew up definite plans for the work for the coming year. The agent

then took the owner out to the orchard and showed him where the woolly aphids spent the winter and of course summer on the roots and explained the necessity of plowing the orchard to kill those in the ground. The agent agreed to be present and to show him how to spray with the lime & sulphur solution together with the lead arsenate later on. The owner agreed to secure the lead arsenate and the lime-sulfur solution, and any other spraying materials which the County Agent recommended.

The plan involved the plowing of the orchard in Jan., the application of a lime-sulfur spray at the time the buds were swelling, and the application of lead arsenate sprays as the petals of the apples and pears were falling and monthly, after.

Execution.

It became necessary for the County Agent to locate the lime sulfur solution which he did. This spray was given just as the buds were opening and a most thorough job was done. This was on April 2 & 3. The first codling moth spray was given on April 22 and was in the nature of a spraying demonstration and was conducted cooperatively by Dr. Oscar Bartlett. All of the orchardists in the community had been called on personally and invited to attend. The later sprayings were given May 27, June 28 and August Sept. 2nd. The spraying for July 28th was missed tho the County Agent visited the orchard on July 26th and the owner promised to spray on that date if the weather cleared up. It cleared up but the spray was not applied and to this the county Agent attributed the most of the worms which show up in the count.

Results.

The winter plowing in January was very effective. The hogs which were turned in after it was plowed thoroughly up-rooted the soil and exposed the infected roots which had been cut off by the plowing. This seemingly killed all of the woolly aphis from that source.

The spring spray of Lime-sulfur killed every mite and red spider in the orchard together with all of the scale and most of the woolly aphis which would have hatched. None of these pests showed up except a few patches of woolly aphis and these the County Agent directed the owner to paint with pure kerosine. He however failed to do this, so it will be necessary to give the lime-sulfur spray again next spring. Unsprayed trees in an adjoining lot were fairly covered as usual.

The codling moth sprays were gauged by some bands which had been placed on about a dozen trees. Five days after the first larvae were discovered the orchard was again thoroughly sprayed and then it was aimed to spray thereafter at intervals of one month.

During the summer there were some hogs running in the orchard and of course as the wormy apples dropped they were eaten. In this way the percentage of wormy apples given below, does not represent accurately the number actually infested. However at harvest time the owner had his pickers strip several trees and these were dumped indiscriminately in a big pile. Out of this 813.5 pounds of apples were sorted by the County agent and separated into their kinds, a count of them being made at the same time. Out of the 813.5 pounds 62.5 pounds were wormy and or showed stings which would have thrown them out on inspection. The remaining 751 pounds were classed as good and it is probable that the Agent did not let a single apple pass in this which was wormy tho probably 2 % were passed which showed stings where the worms had gotten within the skin of the apple before it died. ~~in other words~~ Of the 333 apples which showed either worms or bad stings 74 were only bad stings and the worm had not penetrated deeper than the skin and the apples were otherwise sound.

In percentages by weight 92.3 % by weight and 92.6 by count were free from worms and 6.7 % by weight or 6.4 % by count were either wormy or so badly stung as not to pass inspection. Another orchard in Franklin should have been in this work but at the last notice the owner pulled out and refused to work. About the time the apples were ripening the County Agent went thru this orchard. This orchard by the way showed very few worms in 1918 and it was on that ground that the owner refused to work. When the agent went thru this orchard, there was not an apple on two trees of Jonathans that were there, which was not wormy, and on every other tree in the orchard excepting two heavily laden Ganos, the Agent conservatively estimated the percentage of wormy apples at 83 being based on counts of some 500 apples which were reached from the ground on the limbs of different trees.

By count on the two best trees made later at the request of the owner 31 per cent were wormy out of a total of 264.5 pounds. Other trees were visited on the same date and in looking for 10 minutes the owner and the County Agent secured only 4 apples which were not wormy. The other trees were not heavily loaded.

Returns from the

Orchard. COST. The cost of the sprayings were as follows, for the two men and team for the three days which it took to do the spraying. The power pump had been rigged to an old engine which was used to run a corn sheller.

| | |
|-----------------------------|--------|
| to 5 gals gas at 35¢ | \$1.75 |
| " lubricating oil | .20 |
| " team & man at \$5.00 | 15.00 |
| " single man " 3.00 | 9.00 |
| " rent engine & truck \$100 | 3.00 |
| " Depreciation pump outfit | 5.00 |

Total cost each spraying \$33.95

Cost for 5 sprayings \$169.75

" " material for 5 sprayings 43.00

Total cost of spraying for season \$212.75

Receipts. A heavy frost on May 3 or thereabouts took practically all of his pears. out of those remaining he supplied all that three families could use and sold \$425.00 worth.

The apples have not yet been sold or at least only part of them and a return has not been made to the County Agent, but there will be in the neighborhood of 1000 to 1500 bushels of marketable fruit which is selling at 5 to 7 cents per pound. There ought to be \$2000 worth of apples yet to sell.

In considering these figures it is necessary to remember that in the year preceding there was nothing taken in from the orchard as all of the pears and apples were so wormy that it was practically impossible to sell them and they were not harvested. Had the frost not taken practically all of the pears that item should have brought in at least four or five times the amount above credited.

Demonstrations. In addition to the above work, the County Agent gave a packing demonstration in the orchard to four interested men. Also it was planned to have one at Duncan at the time of the County Fair but on account of the rush it was decided not to hold it.

Fairs. The County Agent also showed Mr. Stewart the kind of apples to select for fair purposes and accordingly there was a good exhibit from his orchard at the fair. Six or seven first premiums were received and the work which the County Agent had done in his orchard was well advertized by the owner himself telling interested spectators of the results. Better than that of course is the fact that his apples are selling rapidly and giving better satisfaction than those of any other grower.

Work for next year. This same work will be continued next year and several more men have asked the Agent to aid them in caring for their trees. All of these requests can be taken care of without any difficulty.

COOPERATIVE EXTENSION WORK IN AGRICULTURE & HOME ECONOMICS
STATE OF ARIZONA.

University of Arizona,
U.S. Dep't. of Agriculture,
Graham & Greenlee Counties,
& County Farm Bureaus,
Cooperating.

Extension Service,
COUNTY AGENT WORK.

HEADQUARTERS, THATCHER, ARIZONA.

Project. "MORE CORN "

Leader. A.B. Ballantyne, County Agricultural Agent.

Location Graham and Greenlee Counties.

LEGAL Authority. Federal Smith-Lever Funds, appropriations from the State and Counties, and special allotment from the States Relations Service, U.S.D.A.

Object. To investigate the relative value of the different varieties of corn now being grown in both Counties, for the different elevations, types of soil and for the different planting dates. 2. To learn the distances it should be planted and the effect of manure on yields.

Situation. There has been no definite knowledge as to the relative values of the many different varieties of corn, neither any idea of the special adaptability of the different varieties to the many different varieties of soil present in the two Counties. The possibilities of the climate for two crops, one of corn after a winter crop, makes it imperative to know the length of season of each variety.

Added to this is the permanent place the growing of corn is taking in the agriculture of the two Counties. With the ever increasing number of silos more corn will be needed and we must learn the best way to grow this.

History. During the fall of 1916 some data was obtained on the yield of silage corn and on the shelled corn. This was so encouraging that a special campaign was run the following year to stimulate the erection of silos to utilize the immense yields of corn which it had been possible to grow on some of the farms. Last year was a poor year for corn on account of the shortage of water and nothing else was done with the crop other than to stimulate the planting of as much as possible. During 1918 and partly as a result of the effort to standardize the varieties of corn, considerable data was gotten on the yield and method of planting and growing of corn. This data showed a tremendous difference in the yielding powers of different varieties under the same conditions. It has also shown that there is great room for modifications in the practices of growing the crop and that a great deal will depend on the selection of a variety to be planted at a certain period of the summer.

Plan. First year. To conduct a series of variety tests with those now being grown, in both Counties with Eureka Red Cob, the common white dent which for a better name we shall call the Gila Dent, Saccaton June and such other varieties as may be found here. To investigate the effect which thick and ordinary planting have on the yield in all of these varieties and where possible to induce the demonstrator to apply manure across a strip of his land which will give us all of these tests of varieties and thick and ordinary planting on manured and unmanured land.

More Corn 2.

At the end of the season each demonstrator will be induced to field select his seed.

The plan does not contemplate the converting of each selected demonstrator to a set type of demonstration but each man selected will be asked to try one or more varieties in addition to the one he intends to grow. If he agrees to this, well and good, if not we shall be glad to have his cooperation with the variety he is growing. No particular time is to be set by the County Agent for planting each particular variety. If suggestions are asked for they will be given and note made on the record of them. They will be asked however to plant their corn in continuous rows and to plant several rows say six, so that the corn plants will stand about twelve inches apart in the row with rows about 40 inches apart. The strip of manured land will be at right angles to and on the lower portion of the rows. Twentieth acre plats representing an average of the crop will be measured and the crop weighed. Not less than two weighings of the entire plat of each variety for silage purposes will be secured, if it is possible.

Not less than two nor more than five demonstrators in each community will be secured. The project covers all of both counties excepting the Sulphur Springs Valley.

Methods of Procedure. Getting Demonstrators. The executive committee of the Farm Bureau in each town will be first consulted and where a corn committee has not already been appointed they will be asked to select one, at least one member of whom must be enrolled as a Demonstrator. The executive and corn committees will then be asked to get together and select the demonstrators for their locality. The responsibility of selecting and converting the men will be left to these committees and the Chairman of the corn Committee will be expected to keep in touch with his demonstrators.

Organization of County Corn Committee. After these committees have all gotten their work going in good shape, they will all be called together by the Pres. of the County Farm Bureau and will be asked to take upon them the further handling of the plans for the field meetings and demonstrations for the selection of seed corn. They will of course select their County Chairman.

Furnishing or Locating Seed. In no case will the County Agent bind himself to furnish seed to the Demonstrators but every effort will be used to locate good seed for the men needing it. In fact there is already selected enough seed of the varieties under consideration to supply all normal demands. Some of this seed will be tested by the County Agent or by the owners for germination.

Follow Up Work.

On the County Agent's first visit complete sets of instructions and record blanks will be furnished each local Committee. Likewise they will be given to each demonstrator personally by the County Agent and any points not clear will be carefully explained. After the work has been well started the County Agent will visit each demonstrator monthly. At each visit the demonstration will be visited and the records completed to date. Duplicate records will be kept by the County Agent. Where asked for or very urgently needed suggestions for the better care of the crop will be given and note made of such suggestions.

As often as possible the Local chairman or one of the corn committee members will be taken on each tour of inspection.

Publicity. Meetings. At least two series of meetings will be held. The first will probably be in connection with those to promote the Rodent Extermination project, and the second will consist of field meetings and an excursion combined. The County Agent will advertize and hold the first ones and the County Corn Committees will be asked to arrange and advertize the others with a minimum amount of help from the County Agent's office. On the excursions the local committee will have charge and conduct the meetings.

Newspapers. Just before the project begins articles will be furnished the local newspapers, outlining briefly the plans and the reasons for them. More complete ones will be printed in the Valley Farm News. Then as soon as the list of Demonstrators is complete it will be published in the Valley Farm News and a summary furnished the County papers. Thereafter monthly summaries of the work will appear in the Valley Farm News and if something worth while shows up it will be given to the County papers. When all of the work is complete a brief summary will be furnished the county papers and a more complete one printed in the Valley Farm News.

After the results are complete they will be tabulated, graphed and discussed in a series of meetings among the communities. These will like the others, be conducted by the Corn committees. As far as practical the demonstrators will be asked to tell their own stories and later comments will be added by the County Agent.

Literature and Records. A number of sets of mimeographed instructions will be furnished the committees on the first round. Later the same set will be furnished each demonstrator. This will contain such information as definitions of the stage called tasseling and stage when we call it ripe, in addition of course to the complete outline of the work.

Records. Complete record forms will be furnished each demonstrator and at each visit they will be called for and if the data is not completed it will be ere the Agent leaves. A duplicate record will be kept by the County agent so that on his last round he will have all of them complete and they will not get lost.

From these records a tabular summary will be prepared and filed with them. From this the report will be written.

Photographs. On each round of the County agent he will take his kodak and if opportunity offers pictures will be taken illustrating the work. Especial emphasis will be placed on photos of the results. Half tones of such as justify it will be made of these and used in the local papers and in the Valley Farm News.

Form of Records. These shall be on cards ~~xx~~ four by six inches and shall call for the following data. Name of Demonstrator & address; preparation land; Variety; date planted; came up; tasseled; ripe; harvested; yield on plot; size plot; yield per acre. Dates & Kinds Cultivations; dates irrigations; Stalks per 100 feet; percent stand; kind and extent insect injury, per cent smut; type of soil; width rows; Remarks.

Dates of Work.

MORE CORN.

Organization. As per the plan set forth in the attached project the local chairmen were asked to select committees of interested farmers who would act as demonstrators, besides getting others to take up the work. This was done after a series of meetings had been held or as they were being held over the county in the districts where it was considered they would be interested.

At these meetings a chart or charts were displayed which showed the results of the previous years work and illustrated the types of work it was desired to take up this year. Photographs of these charts were made and from these cuts were made and run in the Valley Farm News - the Farm Bureau organ. Accompanying these cuts were stories of the work which had been done the previous year and outlining the work as it was proposed to carry it out the current year.

After the committees had been secured they were mailed a complete outline of the work together with a record card and a sheet defining the terms used thereon. Later they were all visited and the work fully explained where there had been any doubt.

Publicity. The original plan called for a series of publicity articles to be published in the local newspapers and the farm bureau paper but the pressure of work coupled with the slowness of the way in which the plantings and consequent development progressed. They also provided for a series of field meetings, but the work of the Greenlee County Fair and the trip to Phoenix to attend the State Fair made these impossible. Accordingly only a half dozen seed selection demonstrations were given in the fields where the county Agent helped gather and weigh the corn. { presented this.

Results. As was the case last year the bigger part of the corn has not been gathered at the time of the making of this report tho within the past few days several more records have come in. It will require a week or more of field work to gather the results and when they have all come in a complete report will be given.

The following table shows the number of demonstrators the number of demonstrations and the area secured in each locality.

| Locality | No. Demonstrators. | No. Demonstrations. | Area. |
|--------------|--------------------|---------------------|------------|
| Bryce | 1 | 1 | 12 |
| Central | 2 | 5 | 33 |
| Duncan | 10 | 21 | 131 |
| Franklin | 2 | 3 | 26 |
| Glenbar | 5 | 8 | 30 |
| Geronimo | 1 | 2 | 12 |
| Hubbard | 6 | 11 | 16 |
| Lebanon | 2 | 2 | 7 |
| Lompoc | 1 | 1 | 5 |
| Pima | 3 | 4 | 34 |
| Ashurst | 3 | 4 | 23½ |
| Safford | 8 | 10 | 93 |
| Solomonville | 2 | 3 | 100 |
| Thatcher | 9 | 15 | 61 |
| York | 1 | 2 | 10½ |
| TOTAL | 56 | 91 | 594 |

One of the difficulties encountered in 1918 was met again this year. All of the committeemen were very busy men and this year as last help was very scarce. With two exceptions most of the committeemen did little work after they had aided in starting the campaign and in getting the demonstrators. This left practically all of the work for the Agent to do and with so many men to see and so scattered it made close supervision impossible. Another difficulty met with was that practically all of the men paid no attention to the outlines in planning their trials so very little comparative work was done

COTTON.

Outline of Plan. The work with cotton this year consisted of two phases. First record of crop yields, Second Variety tests between Imported Big Boll Rowden, Mebane and the common mongrel Durango.

Situation. For eight years cotton has been grown on an extensive scale (or at least extensive for that section) in the artesian belt. Last year and the year before the growers were benefited by the good prices then prevailing and as a result heavy acreages have been planted in the two years just ending. The land in that particular section has been very cheap and rather unproductive on account of the scarcity of irrigation water as the supply from the artesian wells has not been sufficient to irrigate all of the land which the farmers have been planting. For this reason they have scarcely received enough from their farming operations to exist and as a result have not been very up to date in equipment or methods. With the increase in prices in 1917 and 1918 it became apparent that it could be made to pay on the higher priced land in the districts where the irrigation water is more abundant and the land more productive.

Accordingly it was planned to keep some records on the yields of the few acres which were to be planted under the ~~canals~~ canals in the Valley as well as those out in the artesian district together with the costs of production. This was to be made the basis of a campaign to increase the acreage providing the yields and cost records showed a sufficient margin of profit.

Importation In addition to this it was at first planned to start some New Seed. seed selections among the growers. Several of ~~the~~ the growers promised to save the seed from the plants which had been decided ~~on~~ on as being desirable. On making the final canvass of these men it was found that none of them had done it and that the sentiment had crystallized into a desire to import some good seed of ~~various kinds highly productive varieties from the States~~ ~~European~~ varieties with which the men were familiar.

Accordingly the matter was taken up with the State Entomologist and it was learned that there was a provision in the Statutes which permitted the importation of cotton seed into the State of Arizona, by the Experiment Station or the U. S. Department of Agriculture, under certain restrictions.

Complying with the regulations of the Commission of Agr. & Hort. the County Agent represented the U.S. Dep't. of Agr. and 10 bushels of Nebane and Big Boll Rowden were brought in and distributed among four growers.

During the summer they were closely inspected for weevil and pink boll worm but were found apparently free from them. Records on the cultural data has been secured and the yields will be gotten as soon as the picking is ended and the cotton ginned.

As soon as this is secured it will be prepared for presentation to the farmers and then a campaign will be run over the county to acquaint the prospective cotton growers with the merits of the different kinds of cotton and the profits which may be expected.

This is looked upon as important in view of the intense interest in cotton by the farmers over the entire valley. At a meeting held on the 28 of Nov. orders for seven tons of Mobane seed were placed by the farmers, provided of course this seed can be secured and is permitted to be imported.

This matter is now being taken up with the Commission of Agriculture and Horticulture and with the Station Agronomist. It is hoped that the seed can be located and provision made by which it can be imported.

Thatcher Project.

History. This project was organized in 1918 and got as far as the formation of a drainage district under the laws of Arizona, the election of the necessary board and officers and the bond election had passed or was advertized and had been voted by the stockholders in the district. At this stage in the proceedings the Government prohibited the selling of bonds for such purposes and the future activities were stopped.

Progress in 1919. As soon as the restrictions on the sale of bonds was removed the board of directors at once got in touch with bond houses and to date have the contract for the disposal of the bonds signed up. As soon as this matter is passed upon by the stockholders or members in the district work will proceed. The bid for the bonds is \$97 for the \$40,000.00. The Government drainage engineer, Mr. R. A. Hart made a trip down to look over the work and pass on the type of work to be installed and was taken to it by the County Agent. His recommendation of the engineer was acted upon and the man to be employed has been selected. This project involves about 1,600 acres of land.

Private Projects.

The County Agent has been called in on two private drainage projects.

Pennsylv's farm involves the extension of an old system to reach new land. At the request of the owner the County Agent brought Mr. Hart down and he went over the proposed extension and located the general direction of the extension. The work of laying out the line and establishing the grades will be done by the County Agent upon the arrival of a level which has been ordered.

This extension involves the drainage of about 60 acres of land which is becoming or has become unproductive. About 30 acres is unproductive.

Hoopers' Farm, involves the reconstruction and extension of an old system which had become hopelessly clogged. This work had been done under the direction of a Mr. Croper of the Drainage division of the Reclamation Service who had placed in the ground wood boxes which had no bottoms on them. These simply settled down by the weight of the soil over them and refused to function properly. This had been done about 1912 or 1913. ~~the~~

This summer the farm changed hands and the present owners made up their minds to pull out the old drains and install new ones. Accordingly the whole 1,600 feet of old box drains were removed and steps taken to replace it with tile.

At this stage the County Agent was requested to call and go over the whole proposition.

On visiting the place it was found that a car of cement tile 18 inches in diameter and one 4 inches had been purchased and were on the ground. The latter was vitrified tile of excellent quality.

Upon his opinion being asked about the engineering features, the county Agent suggested that they wait until Mr. Hart should come and learn what he advised. They said they could not wait that long and went ahead with placing the tile in. This however was not done until an interval of about a month had passed and on the County Agent's next visit he found them pretty well puzzled about the capacity of the tile. They had laid 300 feet and it was so full that it would not carry the amount of water which they were encountering. This time they wanted to know what to do and the County Agent's suggestion that they wait until Mr. Hart came before proceeding farther was acted upon. Mr. Hart recommended 12 inch tile and the placing of it deeper than they had planned. To date they have placed 1,200 feet of the large tile. We

Greenlee County Fair.

History. The first suggestion of a County Fair for Greenlee was made in the spring of 1916. This was scarcely listened to tho several men said it would be a good thing if it could be carried out but they doubted whether an appropriation could be gotten from the Supervisors and besides there was no one who would bother with it.

The matter was broached again in the spring of 1918 but on account of the war being on it was dropped.

Local Situation.

Greenlee County is practically speaking entirely a mining County or so nearly so that the agricultural part of it does not amount to much. Consequently everything which the agricultural communities get from the board of supervisors is looked upon more as a gift than as a thing which is their just due. In the agricultural section there is a local division - the Mormon or latter Day Saint element being mostly on the farms and the non-Mormon element being in the local trading center. They are about or in the past have been about evenly divided as to numbers - tho at the present time the Mormons are displacing their neighbors. The political elements in the county are all non-Mormon so that between them and the non-Mormon element in the Agricultural section there is close adhesion or it might be said, natural cohesion.

Plan & Method of Procedure. It has been thru the Mormon element in the County that most of the really good work has been done by the County Agent and in this they have been and are, the leaders. The idea of the County Fair has always received ready acceptance among them but has not been very enthusiastically received by some others. The problem this spring when it was decided to make the effort to hold the Fair was in some way to get the business men in Duncan to realize or believe that the people in the County not only wanted a fair but would support one. After some considerable planning with some of the farmers it was decided that if a certain business man in Duncan could be gotten to ~~support~~ support or better to head the committee that it would go thru.

Plan. The plan outlined was - To eliminate the objection that there was no place to hold the fair by securing in advance assurance that the Union High School could be used to hold the exhibits and tht the grounds could be used to care for the livestock and all of the sports except the races. Second to secure the active cooperation of the Principal of the school as it was figured that this would help cement the community. Third it was decided that the County Agent was to ask the man selected to act as chairman of the committee to issue a call to the farmers and citizens to come to a meeting and discuss the advisability of having a fair.

Execution. The above plan was carried out tho it took longer to execute some of the features than had been counted on. However the County Agent was finally authorized to call the meeting.. The citizens appointed a committee of those present to wait on the Board of Supervisors and ask them for an appropriation. Also committees to make arrangements for the High School and one for programmes. In consultation with the appropriation committee the County Agent informed them that he had learned that the two members of the Board of Supervisors had decided not to make an appropriation for a fair. This was just to show the Chairman that he was not the board as the Chairman had given his assurance that the request would receive his support. The County Agent suggested that the committee see the other two members and have one of them bring the matter up before the board. This was done and the board granted an appropriation of about 1100 dollars.

A premium list was tentatively submitted to the Fair Commission by the County Agent and with a few cuts was passed. It carried about \$550.00, as passed.

The Fair. The Fair was held on the 25th of October and lasted only a day. The weather was very stormy or threatening following a night of light showers. Consequently the attendance was not as large as had been anticipated nor as large as it would have been had the weather been bright.

Ignoring this element however there must have been between two and three thousand people who examined the exhibits and attended the sports. Everyone in the agricultural communities was there and a large crowd from Clifton and the other adjacent mining camps. The exhibits were abundant and in some classes the competition was very keen. This was true especially of the corn and some of the fruits.

The Domestic science and art exhibits were very fine and attracted much favorable comment. Masses of chrysanthemums gave an effect which was very impressive.

A representative of the board of Supervisors was present and expressed himself as being well pleased with the showing. No charges had been made for admittance to the exhibits nor to the sporting events. The aim suggested by the County Agent that of giving the people a good time without price was adopted and seemed to meet with the approval of everyone.

In all of the work incident to the fair the people of the community manifested a very willing spirit which extended even to the county officials connected with the roads, allowing as they did the free use of their men and equipment in the grading and smoothing of the race track.

Results. There has been no other piece which the County Agent has done in Greenlee County which in his opinion has done as much to either aid the spirit of the community or else manifest its good will toward the agent as this fair has done. There will probably be no trouble in getting a larger appropriation from the Supervisors next year, which combined with that which will be available from the State will enable a better and larger fair to be held.

INCREASED PRODUCTION OF POULTRY & EGGS.

The outline of a project to be worked out jointly with the Poultry Specialist was made by the County Agent but for some reason an opportunity to work it over with the Specialist did not present itself. For this reason the work done during the year was miscellaneous and without definite channels.

Thruout Feb. March and April about twenty persons were given help in locating eggs for hatching and in finding establishments where they could purchase day old chicks. The placing on farms of about 12,000 day old chicks resulted from this activity in which the Poultry Specialist H. L. Harris cooperated.

The Agent in cooperation with Mr. Harris located two pure bred cocks for breeders.

During March Mr. Harris spent two weeks with the Agent holding meetings to stimulate the keeping of more chickens and to provide suggestions and help in caring for them after they should be received. Mr. Harris also showed the poultrymen how to use the sodium fluoride to kill lice and gave directions for taking care of the other vermin.

Later on thru the season the County Agent helped poultrymen in solving feeding problems.

MISCELLANEOUS WORK IN BEEF FEEDING.

Miscellaneous work in Beef Feeding.

This work was more or less miscellaneous in character. Rations were figured out for 7 feeders. Two herds got off feed and the County Agent was called in. A rapid inspection of the conditions showed too much spoiled silage and not enough alfalfa to be the cause. The Agent recommended a cut in the silage ration and an increase in the amount of hay and cottonseed meal. They were not being fed according to the original plan and ration as given by the agent and all he did was to cut off part of the silage for a few days and the two herds came back without further trouble.

Two of the men furnished statements of their operations showing the gains. They are as follows.

C. S. Conway's car. Fed 95 days.

| | |
|--------------------------|-----------|
| Cost of Cattle | \$1420.00 |
| " " pasture | 102.50 |
| " " 50 tons silage | 400.00 |
| " " 35 " alfalfa at \$24 | 840.00 |
| " " oil meal and Cake | 153.50 |
| " " barley at \$1.75 | 85.25 |
| " " corn at 3 cents | 39.00 |
| Total | \$3040.25 |

Amount received for cattle
(12 cents per pound) 3325.54

Gain \$ 284.29

There should be a charge of \$28.40 for interest for the 95 days which they were fed and there should be a credit of \$4.00 per ton on the hay charged as most of it was not baled and it is charged at the rate the hay was sold for baled and on the car. This would leave \$395.89 for the labor of feeding and as profit on the business

Evans Coleman & Moore. 19 head fed 80 days as follows;

Fed on silage and pasture 28 days
Silage, cold pressed cake and pasture 34 days
Hay & silage 9 days
Hay silage & meal 9 days.

Fed the following .

| | |
|------------------------------|-----------|
| 14 tons silage at \$8 | \$112 |
| 2 " alfalfa " 20 | 40 |
| 700 pounds cold pressed cake | 21 |
| Pasturage | <u>55</u> |

Cost of feed \$228
19 head worth not to exceed
\$20 per head at beginning 380

Total investment \$608

Selling price \$865.24

Net gain to pay for
interest and labor and profit \$257.24

The bunch was made up of 2 aged cows, 3 yearling holstein steers, 1 small black polled steer, 6 Mexican yearlings 1 jersey steer and 6 range yearlings.

MISCELLANEOUS PEST WORK.

Brown Mite. Early in February and thru March many of the fields in the County of wheat and barley showed injury from the presence of large numbers of Brown mite. The infestation seemed to occur on wheat and barley alike and one seemed to be as much damaged as the other. After the extent of the infestation had been pretty well ascertained, the State Entomologist was telegraphed for help. He replied to the effect that such an infestation was new in their experience and that they did not know of any other probable remedy than the dusting with sulfur. Since this was practically out of the question both from the standpoint of equipment and the unavailability of the powdered sulphur as well as probably not being effective at the low temperatures then prevailing, an other method which had proved effective on a similar infestation on alfalfa that of a complete flooding, was tried. It was found that wherever the water covered all of the plants that it had removed the mites, but where there were high spots of where the grain was too high for the water to cover the tips, there were considerable numbers of the mites. Later the infestation was again universal - probably from the colonies which were left on the high places and on the blades of grain which had not been covered.

After the warm weather got fairly started, the mites seemed to disappear and even the worst infested field yielded better than half a crop.

The infestation was practically over the entire Graham County but always occurred in spots in the fields, and only in about every tenth field excepting for about three fields where it covered nearly all of the grain.

As in all infestations with brown mite with which the County Agent is familiar, the infested plants turned yellow and growth was either partly or completely stopped. Where the infestation was severe and long sustained many of the plants died. In the field where the infestation was the worst, probably half of the plants died in the spots where the infestation was heaviest and in some places two or three square rods would have but a very few plants left.

Pigeon parasites.

During the latter part of August a complaint was received of a certain infestation on pigeons. The breeder was requested to secure specimens of the pest and when they were brought it was found necessary to send them to the University for identification. There they were determined to be a close relative of the sheep tick but had long wings. They probably were parasitic on the white wing doves which occasionally flew down into the yard of the infested flock. Later a fledgling white wing flew down into the above yard and was so badly crippled that it died a few days later. Its body was literally covered with the flies.

The fly seemed to sting the young squabs before they were half grown and the action of their hind parts was paralyzed. Sometimes the legs or wings on birds which partly or wholly recovered were so badly twisted that they were practically useless or nearly so.

The University entomologist made some blood tests for parasitic protozoans or bacteria but failed to find any.

Southern Green Plant Bug.

During the year or thru the middle and latter part of May great swarms of the Southern Green Plant Bug flew in from the direction of the Santa Teresa Mountains and of course alighted on the first grain fields which they saw. These were in the lower portion of the Valley and by reason of the long period thru which the infestation continued considerable losses occurred - two or three fields being practically a total loss (30 - 50 A) and probably 150 A more being so badly injured that it was pastured. On another three or four thousand acres the damage ranged from 20 to 70 per cent.

Young barley suffered more than wheat but as most of the barley was approaching maturity the loss was greater on the wheat generally than on the barley. The damage was done by the insect injecting its beak into the milky kernels of the grain and sucking them dry. Usually when the green bug was feeding it would start at either the bottom or the top and proceed systematically over the entire head removing the milk of all of the kernels. Fields had to begin the early dough stage to escape much injury and of course those which were in the stiff dough and turning practically escaped without injury.

The only part which the County Agent played in controlling the pest was in the dissemination to those not familiar with the method, with directions as to the method of riding the fields.

The only remedy known or at least practiced here is to have two men on horses ride the fields with a rope a half or $\frac{3}{4}$ inch in diameter and a hundred feet long stretched between them. On this rope is wrapped some strips of cloth which have been dipped in kerosine. The rope is held taught enough so that it drags over the heads of the grain catching them two or three inches below the base of the head. Getting out before daylight and keeping the operation up thru the day seems to discourage the insects so that they either leave the field and go to some one which is not being so treated or else do little damage.

Miscellaneous Pest work.

In addition to the regular work with the orchards considerable help has been given on the control of different kinds of pests such as control of grape leaf hopper aphid on roses, cabbage, young trees and other crops, Cutworms, corn ear worms, Aphid on cotton and the like. The office of the County Agent is equipped with a small bucket pump and nozzles and it had been the practice to loan this out to those not having the necessary equipment to spray small areas.

Plant Disease Work.

Like the miscellaneous crop pest work much miscellaneous help has been given in the control of grape mildews and rusts on different kinds of plants. Several orchardists called in the Agent. One was being troubled with bacterial gummosis on his plum trees, and another with crown gall on his apples and so on down the list. In each instance help was given where known remedies had proved effective.

Miscellaneous work with Livestock.

One car of cottonseed cake was brought in for starving cattle.

SHEEP. Three farmers having small herds of sheep on their farms asked the agent to locate some good Rambouillet rams. The Agent did this and two were brought in.

Two more men were given help in feeding and caring for their sheep. One was shown how to construct a moveable hurdle fence so as to pasture his ditch banks. Another one was advised to pasture his corn after it had gotten up past their backs. They kept the weeds down and did not seem to hurt the corn.

In addition to this a good deal of work was done in answering enquiries for help in prescribing for sick animals and in rendering services in other ways.

FARM BUILDINGS.

SILOS.

During the year five 14x40 foot concrete monolithic silos were constructed and three 12x30 foot pit silos and one 8x30 foot pit silo all having a combined capacity of about 850 tons. They were all filled, and allowing the current price of \$4.00 per ton after deducting the cost of the corn the cost of filling together with the interest and depreciation the net gain to the County as the result of the agents activity in this respect, was \$3400.00

Cow Barn.

During the year the County Agent assisted one dairyman in the construction of a barn for 40 cows. This is modern in every respect - having metal stalls and stanchions.

GRANARY.

At the suggestion of the County Agent two concrete granaries were built with the silo forms being 14x10 ft. One was reported built at a cash outlay of \$75.00 and it is well re-enforced. It is hard to imagine a better granary than this kind of one.

Another rectangular granary 12x14 feet was also built at the suggestion of the County Agent. This is likewise of concrete. The plans for this were drawn and furnished by the Agent.

Feed Racks. Five modern 12 foot feed racks were built according to plans furnished by the County Agent. The owner says that at the very least calculation they will save him their cost (\$34.00) in six months time over the old method of feeding in square open mangers.

Plans for other buildings and farm devices were furnished other farmers but no concrete results have appeared.

Valley Farm News.

Only three issues of the Valley farm news were gotten out due to the pressure of other work. Forty nine articles were written for it by the County Agent, and he attended to all of the work connected with preparing the manuscript, proof reading and mailing.

As far as possible it was used to carry messages to the farmer dealing with current farm practices. It was also used to further the work of the projects under way.

These issues bore the dates of December, 1918, March, 1919 and August, 1919. Five hundred copies of each issue were printed and distributed.

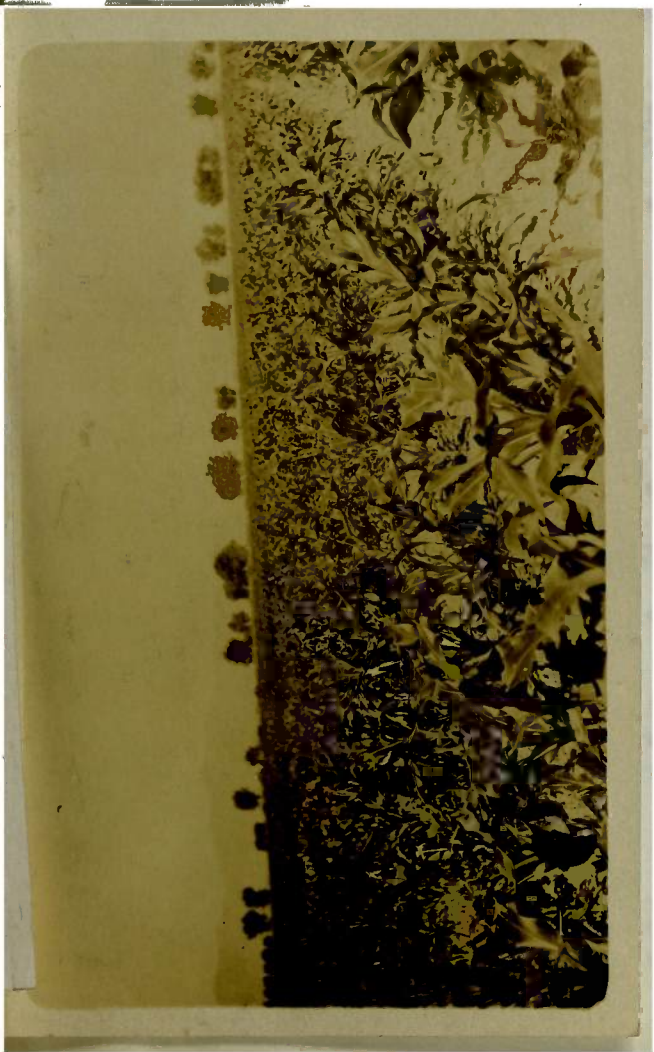
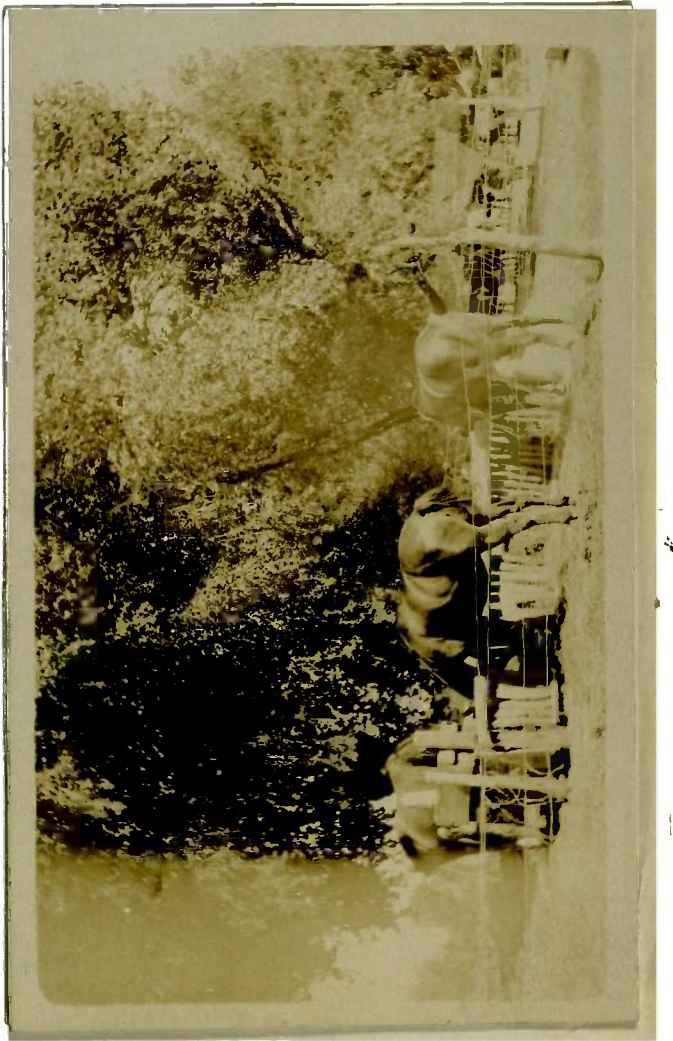
SUMMARY

The chief line of progress made in the two Counties This year has been in the breaking down of ~~many~~ many of the barriers of prejudice which have existed and very materially hindered the work in the past. A good deal of progress had been made in this direction in the previous year, but it was enlarged during the past season. Another feature was the readiness with which the Farm Bureau Committees took hold at the beginning of the season. That they did not find time to do more thru the remainder of the season it would appear were due more to the intense rush of work rather than an indisposition to aid the movement.

Another item which promises well for the future is the work now going on toward the development of the Gila Valley Water Users Association. The County Agent has been requested to take an active part in this and to make it one of his projects. If this carries out its aims it will be the biggest thing which could happen to this Valley.

The permanence of the County Agent work seems to be well assured as the sentiment toward it is now almost universally favorable. There will be plenty of work tho it may take surprising turns and may shift very rapidly from one thing to another. In this the County Agent is keeping in mind the development of a type of agriculture which will be permanent for the section and which can be adapted to the climatic possibilities.





Writing A Narrative Report

If you find yourself hesitating each time you prepare a narrative report, trying to decide how to begin, I dare you to try the outline below. I think you will find that your reporting will be much easier. In fact, it might even be fun!

1. What should be included

- a. Who : the people involved
- b. What : the activity being reported, the results
- c. When : the date
- d. Where : the location
- e. Why : the problem, goal, or objective
- f. How : teaching methods or learning experiences

2. Some guidelines

- a. Use simple, everyday words
 - b. Each sentence not more than 15 - 20 words
 - c. Each paragraph not more than 5 or 6 sentences
 - d. Make it accurate, brief, and clear
-

3. The lead paragraph (who, what, when, where, why, how)

- a. First sentence: who did what, when and where
- b. The next sentence or two: why was it done
- c. The next sentence or two: how was it done

4. The second paragraph (more details on "what" happened)

- | | |
|--------------------|-------------------------------|
| a. Action taken | e. Improved practices adopted |
| b. Decisions made | f. Demonstrations established |
| c. Plans developed | g. Demonstration results |
| d. Recommendations | h. Leaders trained |

5. The third paragraph (more details on "who" participated)

- a. Demonstrators, leaders, speakers
- b. Committees
- c. Agencies, organizations, and groups

6. The fourth paragraph (more details on "how", if needed)

- | | |
|-------------------------|--|
| a. Demonstrations | Use this paragraph only when it is desirable to explain in detail an outstanding teaching method or learning experience. |
| b. Illustrated lectures | |
| c. Group discussions | |
| d. Short course | |
| e. Workshop | |

7. The concluding paragraph

- a. Evaluation statement: usually informal; sometimes formal
- b. Follow-up plans: what happens next?