TEXAS LEAGUE NOTES

By Horace H. Shelton.

Brady, the new pitcher for the Galveston team, looks promising. He played part of last season with Fort Worth.

* * *

The twenty-three inning game between San Antonio and Waco on Tuesday broke all Texas league records.

* * *

Frank Roth, well known in Texas, has made more trips into the big leagues from class A clubs than any man living. He is a veteran pitcher and has not quit the game to become scout for the Cincinnati team.

* * *

Foley White and Stringer, both catchers, have been unconditionally released by the Galveston team. Stringer is catching and managing the Corpus Christi team while White is still without a berth.

* * *

That Waco team is certainly the original hard luck club of the Texas league. Of the fifty-three games lost, twenty-four have been dropped by one run. Of the eighteen games won, each has been won by one run.

* * *

San Antonio has certainly had a hard time trying to fill that shortstop's job. Since the beginning of the season the position has been played by Harrison, Slavin, Kipp, Yantz, Pendry, Alexandre, Larsen, Knaupp and Hubarrt. Who will be next?

* * *

Kid Eberfield, a former Texan, is probably the lightest man in the big leagues. He weighs only 125 pounds.

* * *

Karger, a Kerrville, Texas, boy who is pitching with Boston, has added another victory to his long list this year. He recently defeated Boston in a fourteen inning bout.

* * *

Ables, for San Antonio, is certainly having his best year in minor league ball. Why he can't make good in the big leagues is a mystery. He has not had three chances with three different teams and it looks as if he would be called again next season. Probably with his fine work this year he will make good. Not only is he a speedy twirler, but he is also a heavy batter and a good fielder.

Russell, of the Baltimore Orioles, is the league strikeout artist. He fanned ten men twice this year in each of two games.

* * *

Rankin Johnson, secured by Dallas from the Southern league, has hit his stride now and is pitching good ball. He has been responsible for several of the games recently won by that team.

* * *

Pitcher Johnny Fisher, formerly with the Nashville team, has been secured from Louisville by Mobile.

* * *

Sam Stovall, for many years an outfielder for San Antonio, and now with the American Association, is playing excellent ball. His batting feats are his best recommendations. He is a brother of first baseman Stovall of the Cleveland team.

* * *

Spencer, the speedy pitcher of the Galveston club, has again been sent to third base, that team being unable to secure a man to fill his place. While Spencer is a good pitcher, Galveston has plenty of twirlers and is shy on infielders.

* * *

At a recent meeting of the franchise holders of the Waco team, W. R. Davidson was reelected president and the capital stock doubled, being $6000. No changes are contemplated this season, but two scouts will be put on the road to secure good material for next year.

* * *

Seven of the eight teams of the Texas Baseball league have a percentage better than .500. That is not true of any other league in the country.

* * *

Schan of the Bronchos has developed into a first class catcher. In the early part of the season it was thought that San Antonio was very weak in this department, but Schan has delivered the goods so well that Alexander, the regular catcher, has hardly been behind the bat, filling the role of utility player.

* * *

Morris, manager of the Fort Worth team, is still watching the game from the grand stand, serving his thirty days' suspension for hitting Umpire Blysh. Saims, who struck an umpire, is still playing for Houston.

* * *

Bill Graham, the Texas pitcher released by the St. Louis Browns to Chattanooga of the Southern league, is playing good ball there. He is getting an opportunity to get into the game oftener and he may yet get in shape to warrant being called back to big league company.

* * *

Red McLendon is said to have ruined a great professional baseball future when he quit the Arkansas league to play independent ball with Marshall, Texas. He was leading that league in batting and as a catcher and was making a great utility man. Jack Russell, another player, went with him, and both have been "outlawed" by professional ball.

* * *

Newman, the Texan with St. Louis, is keeping up his fine batting record. He is doing much more satisfactory work all around and the indications are that he will make good with the team. There was a rumor for a time that Hedges was dissatisfied with his work and had arranged for another first baseman to replace him.

* * *

Henniger, the regular catcher for Shreveport, is making a fine record. He is not only fielding his position well but is batting with regularity. It is a mighty swift man that steals a base on him.

* * *

Jerry Kane is still doing the utility stunt for Houston. He is now playing in the outfield. Since his release by Fort Worth there has not been a player in the league who has been doing better work.

* * *

Kaphan, who broke his leg in sliding home several weeks ago, is getting well rapidly. It is expected that he will be able to be in the lineup of the Galveston team by August 1.

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WHO WILL GET AT JOHNSON NEXT?

By H. H. Shelton.

Will Burns, the Australian heavyweight, or Al Kaufman have the next chance at Jack Johnson for the world's championship.

Both men are hankering for the fight. It is doubtful if either hopes to win, but there will be good money for the loser in the next battle or two with the big negro, for the white men will keep hoping that some one will land on him and regain the championship.

Burns and his backers have already made offers and it is rumored that the Australian fighter will be given a chance to meet the negro before many months.

Johnson is not adverse to fighting. He is a free spender and the fight means money to him. If the right kind of a purse is offered, there is little doubt but what a fight can be arranged.

The only reason why there will not be a clash soon is because those who follow the fight game would believe that a fight between Burns and Kaufman or the black man would be a farce.

Kaufman is a big man, but he is not very clever with the gloves. In his fight with Jeffries, Johnson showed that he was strong, wonderfully clever with his fists and had no yellow streak. This leaves nothing to figure but to find a better man, and those best posted admit that no white man or negro, for that matter, in the ring is in the negro's class.

There is also great feeling against the negro and it is doubtful if he would draw well enough to make anyone put up a big purse to get a fight.

The prejudice is clearly shown by the many cities which are passing ordinances prohibiting the Jeffries-Johnson fight pictures being shown on the grounds that they are calculated to stir up race prejudice. This is going to cut the profits of the syndicate that bought the pictures a great deal.

PECOS WINS TWO OUT OF THREE FROM COLORADO

Pecos, Texas, July 9.—The Colorado City ball team played three games here, the first game 8 to 3 in favor of Colorado; the second, 8 to 5 in favor of Pecos, the third, 3 to 2 in favor of Pecos.

The Colorado bunch took their defeat gracefully.

The Hall Room Boys in The Herald. Watch 'em.

THE EL PASO HERALD FARMING PAGE

By H. H. Schutz, assistant agronomist, New Mexico A. & M. college.

Dry Farming and Rain Distribution

NOW that the rainy season has set in, one may assume that dry farming has actively begun. The fact that there has ben a shortage of rain thus far this year should not be taken as a sign that July, August and September will also be deficient in rainfall. If the land has been prepared and is ready for planting, the seed may just as well be sown now, even though there may not be sufficient moisture stored in the soil. Experiments have shown that seed may be sprouted a number of times without serious injury to their vitality, so even should the next rain be a few weeks distant no fear need be felt.

The New Mexico experiment station has compiled tables showing the state of the weather in southern New Mexico for a term of 40 years, and a study of these brings out a number of most absorbing comparisons. In the first place, it may be said that the records taken in the Mesilla valley will in a general way apply to conditions prevailing in southern New Mexico at elevations lying between 3000 and 4000 feet. Most of the rain falls in the months of July, August and September, and the greater part of this in July. The mean annual rainfall is 8.8 inches. The dryest year since 1851 was 1873, when only 3.5 inches fell and most of it, or 2.24 inches, in August. The heaviest precipitation was that of 1905, or 17.1 inches. Rain fell every month during the year, reaching its maximum in September, with 2.08 inches, but July and August had less rainfall than the average for 40 years.

Monthly Rainfall.

The folowing gives the mean rainfall for each month, computed from the records extending from 1851 to 1905:

January, .32 inch; February, .50; March, .28; April, .17; May, .25; June, .58; July, 1.84; August, 1.71; September, 1.45; October, .76; November, .57; December, .44. Total, 8.8.

By the above it will be seen that the first six months represent a mean rainfall of 2.1 inches; July, August and September, the important growing months for many dry farm crops, 5 inches, and the last three months have a mean of 1.77 inches.

The years 1878, 1886, 1896 and 1900 were average years, so let us see how the rain was distributed during the year.

	1878	1886	1896	1900
Jan.-June	3.74	.72	1.64	3.46
July-Sept.	2.88	4.30	4.27	4.22
Oct.-Dec.	1.45	2.87	2.14	.72
Totals	8.01	7.89	7.99	8.40

For the first six months of this year the records of the New Mexico station show the folowing monthly precipitation:

January, .22 inch; February, .02; March .32; April, .10; May, trace; June, .25. Total, .93 inch.

The year 1887 was similar to 1910, only 1.18 inches of rain having fallen during the first six months, yet during July, August and September there was a precipitation of 5.26 inches. The year 1899 likewise registered but 1.09 inches up to July, still there was a rainfall of 7.12 inches during the following three months, and a total of 9.67 inches for the year.

Heavy Summer Rains.

If there has been a year whose first six months looked gloomy and unpropitious to the dry farmer, it was 1902, when there was only .15 inch of rainfall until the end of June. However, July opened with 2.16 inches, followed by August with 5.77 inches and September with 1.22 inches. The first half of 1904 had a rainfall of .86 inch, less than the .93 inch for 1910, yet the succeeding quarter had a generous rainfall of 6.63 inches. With the above evidence of former years before us, it is seen that just because there is a deficiency of rainfall so far it does not foretell a drouth for the remainder of the year.

It is not only the rainfall that is of importance to the dry farmer, but the evaporation from the soil as well. On hot days with a steady wind blowing, moisture is extracted from the soil at a tremendous rate. It has been found that the evaporation at Amarillo, Texas, is 54 inches of water; at El Paso, 58 inches; at Yuma, Arizona, 56 inches, and 72 inches at the boundary between upper and lower California.

King has found that "in the conservation of soil moisture by tillage there is no way of developing a mulch more effectively than that which is produced by a tool working in the manner of the plow, to completely remove a layer of soil and lay it down again, bottom up, in a loose, open condition." This method of mulching has been practiced by the natives of this region for generations. It is used when they plow their corn in covering it with a three inch mulch as described by Prof. King, and again after rains when there is no irrigation water to be had.

The Wind Movement.

The average wind movement in the Mesilla valley is 6.7 miles an hour, which fortunately is at its greatest not when the temperature is highest, but in March, April and May.

Average wind movement per hour: January, 5.8 miles; February, 7.2; March, 8.8; April 8.7; May, 8.0; June, 7.0; July, 6.4; August, 5.7; September, 5.8; October, 5.7; November,5.5; December, 5.6; mean annual, 6.7.

H. M. Cottrell suggests the following four divisions as necessary to secure profitable crops in Colorado, where the rainfall is limited:

1. Storage of rainfall.
2. Retaining moisture in the soil.
3. Reducing the effects of the wnd.
4. Drouth resisting crops from seed grown under dry land conditions.

To store the rainfall, it is necessary to have the soil in a granular and porous condition and preferably broken to about a foot in depth. Raw prairie land should be plowed so as to lay the furrow slice flat and then harrowed to induce prompt rotting of the sod. Mr. Cottrell, writing after 21 years of observation on the plains, does not recommend subsoiling, because the soil does not remain loose long enough to be of benefit, and advises farmers to try subsoiling on a small scale first. Deep rooted plants like alfalfa, brome grass and sweet clover, may be used as a cheap method of loosening hard soils. Care in not spreading manure too thickly, and harrowing it in when used as a top dressing for grain, grass or alfalfa, will enable one to secure the benefits of manuring without its drawbacks where moisture is deficient.

Retaining Moisture.

Moisture is retained by maintaining an earth mulch to cut off the movement upward of the water held in the soil. Since the evaporation from stubble fields is very rapid, a disk harrow should be run over the field upon the removal of the grain crop to check loss. It is difficult to raise a profitable crop when the rainfall is much below 12 inches for the year and five inches during the growing season without falowing one season. Even when no crop is being raised on the land it must not be forgotten that harrowing occasionally is essential to retain an efficient mulch. Instead of farming 80 acres of a quarter section each year, a Logan county, Colorado, farmer raises three crops in four years. The first season the land is kept cultivated, though no crop is grown; winter wheat is sown in the fall and the land is disked upon removal of the crop and later plowed and harrowed. The next year corn is planted and kept well cultivated to give an effect similar to that of summer fallow. The year following wheat is again sown and the fourth year is one of summer fallow.

It is also recommended by Mr. Cotterell that land be well disked before plowing, in order that when the surface is turned under the pulverized soil will form a better connection with the dry soil below. To show the effect of subsurface packing 160 acres of land were plowed for wheat, 80 of which were well harorwed and the other 80 were fitted by packing. The harrowed ground produced 18 bushels per acre, the packed 40 bushels. It is not necessary to use the packer if the soil is moist enough to settle freely. Weighting a disk harrow and setting the disks straight makes a fair packer, likewise a corrugated roller, but one with sharp wheels is preferable.

A Rough Surface.

The more uneven the land, the less will be the motion of the wind near ts surface, for which reason the smooth roller is not to be compared with the corrugated one and the subsurface packer. Running the furrows at right angles to the direction of the strongest winds will also reduce the effects of the wind. It is suggested by Prof. Longyear, of Colorado, that the following varieties of twoyearold seedling trees planted eight feet apart each way would make an ideal windbreak: two outer rows of Russian olive, third and fourth rows of black or honey locust, the fifth and sixth rows of ash, the seventh and eighth of American elm or Golden Russian willow, and the two inner rows of cottonwood or Carolina poplar.

Using seed grown in the neighborhood or elsewhere under dry farming conditions is held to be most important. Seed brought from a distance and grown under unlike conditions may do well in favorable years, but when moisture is scant it may not bring the results given by acclimated seed. Wheat, barley and speltz are crops that mature early, before the spring moisture is gone or the hot winds begin. Sorghum, milo maize and kaffir corn are certain crops on account of their drouth resisting qualities. One-half the amount of seed sown in humid regions is a safe quantity to sow under arid conditions.

How to Sow.

Mr. Cotereil recommends the following pounds of seed per acre, varying the amounts with size of seed and condition of the soil:

Wheat, 30-40; barley 35-50; speltz, 45; flax, 20; millet, 10; sorghum, drilled for forage, 25; kaffir corn, drilled for forage, 25-30; milo and maize for grain, 5-8; corn, single seeds, 15-18 in apart; dwarf Essex rape, 3-5; brome grass, 20; alfalfa for hay, 12-20; alfalfa, cultivated for seed, 2-3; sweet clover, 20-25.

Broadcasting wastes seed and produces weak plants, also covers some too deep, others too shallow. When drilling, it is well to see that all seeds are distributed evenly in order not to cause bunching and exhaustion of moisture.

STATISTICAL BALL DOPE.

By Art Woods.

WHERE THEY PLAY SUNDAY.

National.

Brooklyn at Cincinnati.
Boston at St. Louis.
New York at Chicago.

American.

No games.

Texas.

Shreveport at Ft. Worth.
Oklahoma City at Dallas.
San Antonio at Houston.
Waco at Galveston.

Cactus.

Douglas at El Paso.
Clifton at Cananea.
Morenci at Bisbee.

HOW THEY STAND.

National.

	P.	W.	L.	Pct.
Chicago	67	43	24	.642
New York	66	40	26	.606
Pittsburg	65	24	31	.523
Cincinnati	69	36	33	.522
Philadelphia	67	32	35	.478
Brooklyn	67	30	37	.448
St. Louis	69	30	39	.435
Boston	72	26	46	.361

American.

	P.	W.	L.	Pct.
Philadelphia	69	46	23	.667
New York	68	40	28	.588
Boston	69	39	30	.565
Detroit	73	41	32	.562
Cleveland	63	29	34	.460
Chicago	67	30	37	.448
Washington	70	27	43	.386
St. Louis	67	21	46	.313

Texas.

	P.	W.	L.	Pct.
Houston	76	43	33	.566
Dallas	80	45	35	.563
San Antonio	79	43	36	.544
Ft. Worth	75	40	35	.533
Galveston	80	42	38	.525
Shreveport	80	41	39	.513
Oklahoma City	75	37	38	.493
Waco	73	18	55	.247

Cactus.

	P.	W.	L.	Pct.
Douglas	29	19	10	.655
Morenci	18	11	7	.611
Bisbee	22	12	10	.545
Cananea	22	10	12	.455
El Paso	24	10	14	.417
Clifton	17	4	13	.235

AGRICULTURAL NOTES.

Check rowing corn and spacing the kernels when planting so that the stalks in the same hill will not crowd each other will increase the yield two or more bushels to the acre. In one year a 4 percent increase in the corn yield of Illinois alone would add $6,000,000 to the income of the farmer. If kernel spacing planters were used for all the corn crop in the United States, 50,000,000 would be added to our annual production.

The Estancia valley, New Mexico, formerly contained a lake several hundred square miles in area, according to a recent examination by the United States geological survey. The wind has worked out large basins and thrown up clay hills as high as 100 feet since the ancient lake disappeared. The drainage basin contains some 2000 square miles, but includes no permanent streams. Water is found at moderate depths and almost anywhere.

Sugar beets do well in all soils from silts and sandy loams to heavy adobe. The clay soils are more difficult to work than the lighter ones; they also form a crust after rains or irrigation and crack when dry, but heavier yields are possible on them and their supply of plant food is not so easily exhausted. Tilling adobe soils every year will cause their condition to become better, and they will continue to give large yields for a long stretch of years, even without fertilization.

Hanging harness just back of the horse in the stable tends to shorten the life of the harness. The gases arising from the manure, if the stable is not kept well cleaned, are injurious to the leather, and it is not infrequently the case that the harness falls under the horses' hoofs and becomes soiled. A harness room near the stables with a hanger for each horse's harness will do much to prolong its usefulness and keep it appearing well.

Orchards in Colorado are beginning to show the evil effect of clean cultivation and exposing the soil to the blazing sun during the summer. Something must be done to restore soil fertility if the orchard or vineyard is to continue vigorous and fruitful. Cover crops of clover, vetch, Canada field peas or soy beans may be sown and plowed under in the fall in order that they may decay, but should the soil become too rich with nitrogen a grain crop or buckwheat will correct it.

Wind cannot ordinarily be depended upon for irrigating areas of any extent, consequently farmers who had installed windmills thinking to get a cheap source of water supply are supplanting them with electric motors and gasoline engines with centrifugal pumps, which are more reliable. Under favorable conditions at Stockton, Cal., their 22 foot mills will raise 300,000 gallons a day, lifting it 10 to 15 feet to the surface. The wooden mills with hard maple bearing require less attention than the steel ones

The Care Of Alfalfa In the Field

WHEN we sow 20 pounds of alfalfa seed per acre over 4,000,000 seed are put into the ground, but from some cause or other established alfalfa fields seldom have more than a fifth of this number of plants. At Colorado it was found that a piece of six months old alfalfa contains 653,400 plants per acre, or 15 plants per square foot, which made a plant for every seven seeds sown. A 10yearold field, yielding four tons per acre, contained an average of 526,793 plants. Another field at Rocky Ford contained but 139,392 plants to the acre, yet yielded 4.4 tons of hay. A field of sandy loam, near all of whose plants had a hollow crown and root, had 70,283 plants and yielded three tons per acre.

At three tons per acre, each of the 70,283 plants must have produced about 1 1-4 ounces of hay; where there were 562,793 plants and the yield four tons, the average per plant was but one-fourth ounce. Plants growing without hindrance from others have been found to consist of as many as 60 stems, others to yield a pound of well cured hay each. An even stand of from one to four plants per square foot is held to give every advantage of clover planting. Four plants per square foot is equivalent to 174,240 plants per acre, which means that one pound of good seed contains enough embryos to plant an acre. It is needless, of course, to point out the wisdom of sowing such an excess of seed.

The Plants Per Foot.

At Kansas 126 plants per foot were counted. It is maintained that thin sowing will allow the plants to get a stronger start, to become more productive and to maintain a good stand longer than where sown thickly. Where the land is rich, thick sowing undoubtedly produces a finer hay than where sown thinner.

To ascertain at what rate alfalfa dies out, the Kansas station staked out a square of 10 feet to the side in the spring of 1903 in a field that was sown the previous fall. In June there were 1133 plants in the plat or 11 plants per square foot; in June, 1906, there were 670 plants, or six per square foot, and in August, 1907, only 493 plants remained, or four per square foot. In a period of 50 months, therefore, there was a decrease of 64.4 percent. In another experiment, but 13 percent of the plants originally counted survived four years.

The yield of the fields did not decrease to any perceptible extent and the alfalfa was as good as before. It is explained that as the plants decrease in number, the remaining ones increase in size and number of stems and occupy the space vacated by the dead ones. In the course of time the stands become thin and the field is ready for reseeding.

Thickening the Stand.

It often appears difficult to thicken a thin stand of alfalfa, yet if the seeding is done early in the spring before the old ones get started in their growth and shade the seedlings or rob them of moisture and plant food, it is no insupearble task. In an old field, however, it is not advisable to attempt to thicken the stand because the young plants are badly handicapped by the old, well established ones.

Cultivation.

There are many reasons for cultivating alfalfa, and that it is being recognized by farmers is attested by the numbers of cultivators now offered by implement manufacturers. Cultivation loosens the ground after it becomes packed from the machinery and horses and irrigation. It forms a mulch, induces aeration, loosens the soil from about the plants, and allows the water to enter more freely. Looseness of the soil is necessary for the proper development of the root bacteria, else they would suffer for the necessary amount of oxygen. Cultivation also kills insects in the soil and destroys their eggs; it also covers the myriads of leaves lost during haying; and it splits the crowns of old plants and causes a renewed growth of stems.

Implements and Methods.

The spike tooth disk harrow is replacing the ordinary disk harrow for cultivating alfalfa. The danger of injuring the plants is less, the soil is loosened to a depth of two or three inches without leaving ridges, the crowns are not split as with the disk, and it may be used most efficiently in other forms of farm work. In Kansas it is the practice to disk early in the spring to loosen the soil for the reception of any rain that may fall, and often after each cutting. New alfalfa should not be disked. If in using the disk a good mulch is not formed it may be well to cross harrow with the spike tooth to break any clods and to smooth down the ridges.

In the fall of 1906, 10 tons of well rotted manure were applied as a top dressing for winter wheat in Kansas on one plat and another was left untreated. Alfalfa was sown on the two plats the fall following, with the result that in April the manured plat showed plants 13 inches high and 63 per square foot, while the unmanured measured 4 1-2 inches high, 50 plants per square foot. Manure will help alfalfa as well as other plants. When applying care should be taken that it be spread lightly and evenly, then disk thoroughly.

The Problems of an Irrigation Farmer.

The yearbook of the department of agriculture, just issued, contains an article by C. S. Scofield, agriculturist in charge of western agricultural extension, that tells of the difficulties and problems of irrigation. The bureau of plant industry, of which he is a member, has undertaken to investigate problems in connection with the work of the reclamation service, such as those dealing with crops, tillage methods, crop rotations and the introduction of new crop industries.

The present generation of western farmers are the ones who have made most progress in American irrigation. Even before the time of Columbus irrigation was practiced in western America, yet the actual working out of problems of soils, crops, alkali, drainage, cooperation, farm implements, markets and transportation dates back slightly more than half a century.

Capital and Experience Necessary.

A great proportion of the settlers upon western irrigated lands come from the cities and towns of the east, who bring with them little cash or agricultural experience. The advertisements that attract these people overemphasize the bright prospects without making reference to the experience and money necessary for success or even a start. Agricultural experience and sufficient money do not always bring success in irigation farming; and it frequently happens that the farmers from the east and middle west are slower to adapt themselves to the new conditions than the setlers from the cities, who do not have to unlearn, but merely to learn.

Diversities of Irrigated Lands.

There is more diversity in western irrigated lands than in the rest of agricultural America. The conditions range from the hot, dry weather of the southwest, where rain and frost may be almost unknown, to the high, cool valleys, where thre snow is deep in winter and frosts occur in summer. On the extreme Pacific the climate of winter and summer differs chiefly in the amount of rainfall, and on the eastern slope of the Rocky mountains the annual extremes of temperature are as great as anywhere in the country. Only the most general problems are common to all irrigated regions and each locality has its special advantages and peculiar problems.

Newcomers will save money and much vexation if they will follow the system used where they have settled, for even in the methods of clearing land, leveing for irrigation, building ditches and selection of crops there is often the greatest diversity.

Selecting and Starting.

In selecting a farm it should be borne in mind that it costs more to prepare some lands for irrigation than others, and some will begin to give returns quicker. The land should be carefully examined and the cost of leveling and ditching considered before buying. Desert land may take several seasons before it becomes profitable for crop production, and regions may be so distant from large markets that only the higher priced fruit and dairy products will stand shipping. One should retain sufficient capital to last through at least the first season as an assurance against total crop failure. The lack of money is perhaps responsible for the enforced abandonment of most irrigated farms.

Choice of Crops and Rotations.

In irrigated regions the tendency seems to be to specialize in a single crop. First grain and alfalfa are grown, then follow fruits and vegetables. New land is sometimes put directly into vegetables, fruits or sugar beets in an effort to secure early returns.

Crop rotation is practiced very little in irrigated localities, due probably to the impression that the fertility of the soils cannot be exhausted and intertilled crops are grown on the same land for an indefinite period. It is expected that where orchards are planted and kept cleanly cultivated, this cannot last, however, and some crop must be grown in the orchard to supply organic matter to the soil, and to prevent the destruction of that originally contained. There is a temptation where alfalfa grows well to allow it to take permanent possession of the land to the exclusion of crop rotations. It is a crop that does not lend itself well to rotations, it is true, on account of the time necessary to get it well established and the difficulty in plowing it up.

Tillage and Water Economy.

The irrigation farmer does not always realize that tillage while preparing the land and intertillage when the crop is advancing are almost as important as the water itself. Some of the most prosperous irrigation communities are what they are today onand it is safe to specialize.

account of the scarcity of water which taught the farmers how to grow crops with a limited supply and not to let irrigation take the place of cultivation.

Too much water leaches the soil, forces out the air and interferes with the micro-organisms that assist the crops in obtaining their food supply. Larger yields per acre are possible where the ground is not kept too wet and cultivated after every irrigation.

Underground Waters and Alkali.

In the old world numrous irrigation enterprises have been ruined through the rise of underground waters and of alkali. Too much irrigation fills the soil with water and the evaporation of the water which carries the alkali in solution leaves it at or near the surface. Natural or artificial drainage will remove the excessive collection of water in the soil and in a way counteract the evils of too much irrigation. The use of an excess of water on high ground may not only injure the farmer who applies the water, but the ones on lower adjacent lands as well.

Drainage is the one certain remedy for alkali difficulties. Where drainage cannot be practiced and alkali occurs only in spots, temporary relief may be secured by using but little irrigation water to wash the salts into the soil and then tilling thoroughly to cut off the capillary movement of the moisture.

The native vegetation is often a good indication of the presence of alkali, and the experienced observer can tell whether irrigation is apt to develop alkali troubles. The creosote bush in the lower Colorado river valley is taken as evidence that the land is fairly free from alkali, and in the Great Basin the greasewood indicates that alkali troubles are not improbable.

In going into a new region, it is well to inquire about indicator plants, to note the depth and quality of water in wells and drainage channels, and to note whether there are any pronounced topographic features connected with the piece of land in view. In some of the western valleys there are series of benches above the valley proper, and in cases the lower places have been swamped by the salt-bearing seepage from above.

Community Life and Cooperation.

In irrigation communities the farms are smaller, the homes closer together, and land values are higher, and roads and schools are consequently better. The community interests are different from those in humid regions, the very existence of the community depending upon a water supply shared by the settlers in common. The members find it to their advantage to consider problems from the community standpoint rather than from that of the individual.

There are many cooperative features in irrigation communities, such as ditch construction and maintenance, purchase of supplies, associations for marketing produce and manufacturing enterprises, such as butter and beet sugar factories.

An effective system of inspection of all nursery stock brought into irrigation communities is one way of avoiding dangers that are apt to occur. The fact that the system of farming is usually intensive and specialized causes the problems of insect pests and plant diseases to be most acute.

Cooperative work in marketing produce accounts for much of the prosperity in western communities. Cooperation has been used to produce economy of effort and to maintain a high standard of quality.

Markets and Transportation.

On account of the distance from market of most of our irrigated lands the crops produced must be rather high priced and concentrated. The crops first grown on the farm, such as grain and forage crops, cannot bear high transportation charges, and perishable crops, like tomatoes and cantaloupes, involve large risks. Potatoes and onions are revenue producing crops that are less perishable.

It is wise to plan and equip a new irrigation farm in a new region so that it will produce as much as possible of the food required. Consequently, livestock and poultry should be considered, and vegetables should take their place alongside of the grain and hay in the system of farm management. If supplies for home consumption come off of the farm, living expenses may be kept down until a market is assured

Unproductive Soil; Its Study

AT THE horticultural farm of the New Mexico College of Agriculture there are a few spots of land that contain so great a percentage of water soluble solids that crops cannot be sucessfully grown upon them. This condition is due in some cases to the rise of alkali and in others to the fact that goat manure was applied rather heavily.

The bureau of soils has found that sodium carbonate, or black alkali, is most injurious to plant growth, though not more so than magnesium chlorid and sulfate. Ordinary salt, sodium chlorid and sodium sulfate come next in point of ability to injure plants. Common crops will not bear more than .65 percent of sodium carbonate, .5 of sodium chlorid and 1 percent of sodium sulfate. The character of the soil and the kind of plant cause the above figures to vary somewhat. In sandy soils, alkali will make itself felt sooner than in the heavier clay ones. Some plants, like the salt bush and sorghum, are notorious for their ability to withstand the concentration of salts in the soil.

Black Alkali's Havoc.

It is claimed that black alkali works its havoc by dissolving the organic material of the soil and corroding the developing seed and the roots of plants. The white alkali salts, such as sodium sulfate (Glaukers salt), sodium chlorid (common salt), magnesium sulfate and magnesium chlorid, do not act as poison toward plants, nor do they decompose the plant roots, but when they become concentrated they seem to keep the plants from taking up the necessary food and water.

Cabbage was planted this year on the horticultural farm where the goat manure had been heavily applied, but the plants are not healthy or doing well. They have received the same treatment and supply of water as plants on adjacent plots which are growing vigorousiy. The surface crust of this manured soil analyzed 1.23 percent water soluble solids and .11 percent bicarbonates; while the soil taken from six inches and 12 inches below, 0.41 percent water soluble solids at each depth and .73 percent and .05 percent of bicarbonates. Since the ordinary limit seems to be .05 percent, it follows that cabbage is no more alkali resistant than most of our common crops.

Manure Helps Some.

Though manure was applied three years ago, one spot, near the one just referred to, analyzed 7.33 percent water soluble solids at the surface, which was white with salts, and 4.42 percent an inch below. The bicarbonates ran .30 and .145 percent, respectively. Naturally the cabbage plants growing in this spot were lacking in vigor and growth.

A natural alkali spot where onions had been planted was next examined. The water soluble solids came to as much as 9.91 percent, the bicarbonates at .05 percent, the chlorides to 5.91 percent, the lime to 1.64 percent and the soda to 1.71 percent. The onion plants in this spot made resistance for a short period and then died.

This year is the first one in the three that have elapsed since the manure was spread that the plants have been able to subsist as long as they have. Prof. Hare, the station chemist, has taken hold of the problem with the horticulturist, Prof. Garcia, and proposes to make some further investigations.

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