Salt River Valley of Arizona === Special

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The Roosevelt Dam, Arizona

From a photograph of the Roosevelt dam, taken March 1, 1909. The dam, on that date, was seventy-eight per cent completed and the water in the reservoir, just above the dam, was one hundred and ten feet deep. The reservoir will be two and one-half miles wide and twenty-five miles long. When completed the elevation of the top of the dam will be on a level with the road running along the cliff on the left

1912

View of Reservoir, Reclamation Headquarters at Left, Cement Mill in Center, Contractors' Camp at Right

The Building *of the* Roosevelt Dam

By Chester W. Smith

It has been observed by one closely connected with the building of the reservoir, that God did ninety per cent of the work when He created the reservoir site. "God can do everything, but He doesn't get out and hustle," declares Mr. Smith, Engineer, United States Reclamation Service.

The Salt River Valley is a conspicuous instance of a combination of natural conditions that seem to offer an imperative invitation for man to go to work and supply the one condition which Nature did not. Here are miles upon miles of desert land, which, however, upon the application of water becomes marvelously productive, an ideal climate and a river. The river, however, at the season of greatest need, is but a meager stream; at other seasons, from its steep, bare watershed sweep floods which not only could not be utilized, but which frequently destroyed the casual and insufficient irrigating works first constructed.

Save the flood waters—a simple idea. The idea and the *desirability* of its realization would occur to any intelligent observer, but its possibility, together with the *determination* to accomplish, was a rare combination. To A. P. Davis, the present Chief Engineer of the Reclamation Service, is due the conception of the project in its present proportions; but the history of the movement towards its realization, of the years of self-sacrificing work by many men, of the opposition within and without, belongs to another story and an abler pen.

In 1902, the Reclamation Act was passed, and soon after the work on the project was begun. Briefly, the scheme was this: Seventy-five miles up the Salt River and just below its junction with Tonto Creek, build a masonry dam, arched upstream, 276 feet high above bedrock, 700 feet long on top, and containing 326,000 cubic yards of masonry, thus forming a reservoir twenty-five miles in area, to contain water sufficient to cover 1,284,000 acres, one foot deep. The water so stored to be released as needed, to flow down the old river channel, and on reaching the irrigable land be turned into the irrigating ditches by a low diversion dam, to generate power at the dam and transmit it to the Valley for use in pumping water to irrigate more land.

Thus, baldly stated, no idea is conveyed of the amount of work (largely preparatory) or the diversity and amount of detail which had to be worked out, some in advance, but much of it as occasion arose.

The site was inaccessible from Phœnix, save over the roughest of trails, so men and materials were first brought in from Globe, forty miles, over a road none of the best.

To solve the problem of power required for the various operations, a power canal was determined upon; heading in the Salt River, nineteen miles above the dam site, it conveys 250 cubic feet of water per second to a point just below the dam, where a drop of 220 feet is obtained.

On the line of the canal are twenty-one tunnels with a combined length of nearly two miles, two inverted siphons to carry the canal under cross canyons, many culverts, waste gates and other structures. The tunnels were lined, and the other structures all built, of concrete.

Water power was first furnished in April, 1906.

The freight rates, and the expensive wagon haul to the work, led to the manufacture on the ground of much of the material needed. Lime was burned, bricks made, a sawmill furnished lumber, and a cement mill was erected to furnish cement for the dam, and for such other structures as could be delayed till the mill was finished.

The sawmill was erected in the Sierra Ancha Mountains, and some twenty miles of road built to connect with the existing road; at this mill was sawed about 3,000,000 feet of lumber which was hauled thirty miles to the work. This mill was operated until the decreasing consumption of lumber made it unprofitable.

Early in the history of the project, i. e., February, 1904, bids were invited for the furnishing of 200,000 barrels of cement at Roosevelt. The lowest bid received was $4.98 per barrel, which was low considering the long haul; but, as good cement materials existed at Roosevelt, it was finally determined to erect a mill and manufacture the cement. The mill has been in successful operation since the spring of 1905, and has furnished a high-class cement at a cost, including the mill, which shows a saving of at least $600,000 from what the cost would have been of importing the cement; though the number of barrels used will considerably overrun the 200,000.

The mill, though of a nominal capacity of 300 barrels per twenty-four hours, has an actual capacity of about 450 barrels.

During the early operation of the cement mill, before water power was available, power was furnished from a 250-horsepower temporary steam-power plant, which also ran carpenter and machine shops and an electric lighting plant. Wood fuel for the steam power plant was hauled in from considerable distances, both by wagon and on burros. Something like twenty-five cords per day were used, at a cost of $5.50 to $6 per cord; and, as there was very little wood in the vicinity, by the time water power was available, the country was practically stripped for ten miles.

A prominent feature of the early work was the construction of a road from Roosevelt to the railway terminus in Mesa, a distance of sixty miles, at a cost of nearly $300,000. From Mesa the road crosses about twenty miles of desert, the remainder of the distance to Roosevelt is through a most spectacular mountain country, difficult and expensive to traverse. The road was completed early in 1905, and its cost was more than warranted by the saving in cost of wagon haul for the large amount of freight to be handled.

A large item in the freight hauled over this road is the fuel oil used to burn the cement, approximately one barrel (forty-two gallons) of oil being used for each four barrels of cement.

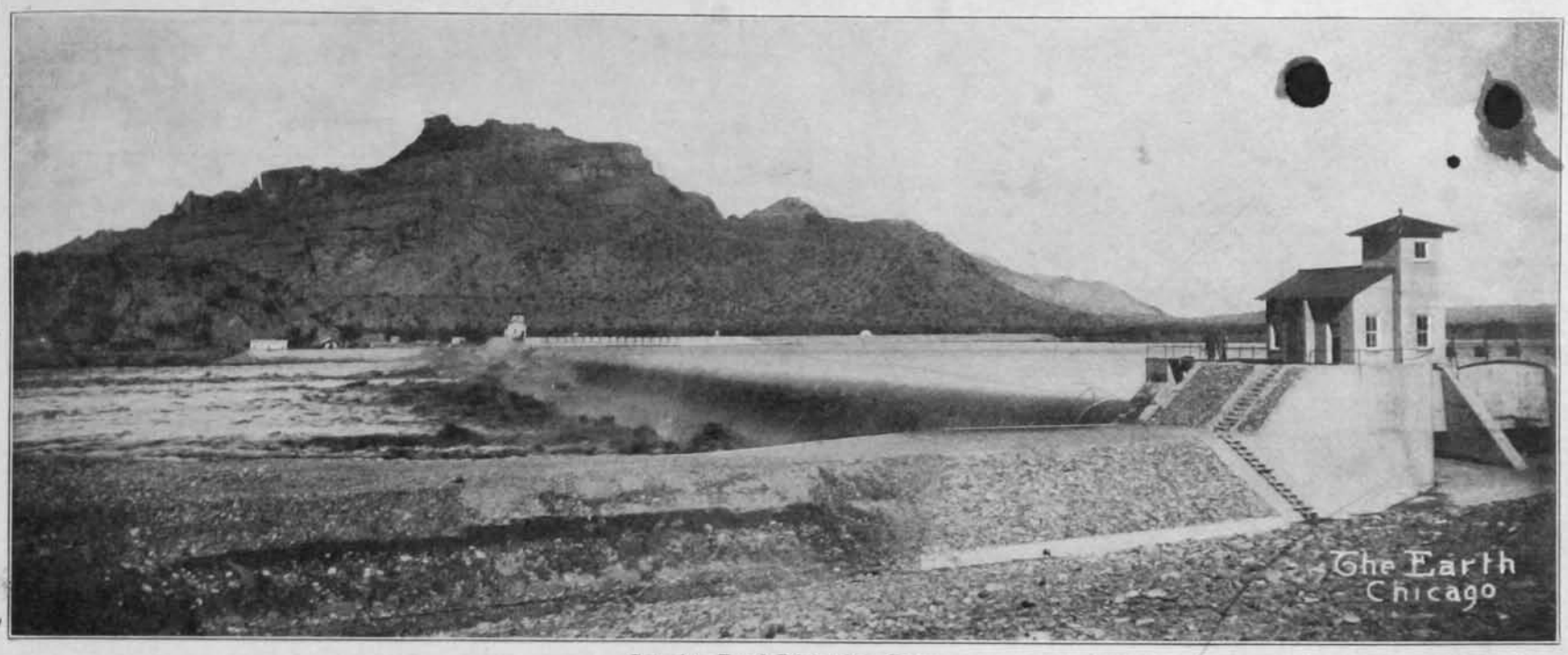
The plans contemplated the building of a permanent power house on the left side of the river immediately below the dam; the penstock from the end of the power canal being an inclined tunnel 620 feet long, passing under the spillway at the south end of the dam. The first wheel to be installed, however, was erected in a niche cut in the cliff just behind the power house before the house was erected.

A tunnel was driven through the rock around the south end of the dam for the purpose of diverting the flow of the river during the construction of the dam; and on the completion of the work to act as a sluiceway to carry off, during periods of low water in the reservoir, such silt as might accumulate in the reservoir.

It is difficult for an outsider to realize how interdependent these preliminary operations were, how many temporary expedients were resorted to in order to make progress in one direction, that leading to progress in another, and both contributing to more permanent accomplishment in still another. For instance, rough trails were used or constructed in order that pack trains might bring along camp

FOR the man with a fair amount of energy and common sense, but with little money, and a large or growing family, the small farm in the Salt River Valley offers the BEST opportunity for subsistence, for healthful development and for acquiring an enjoyable home and a competence for old age.

F. H. Newell



Granite Reef Diversion Dam

outfit, tools and materials for constructing a road; the road at first blocked out roughly just enough to pass teams, the teams brought other necessary material, machinery, lumber, supplies of all kinds, fuel, oil, etc. The fuel oil went to make cement; with lumber for forms, the cement became available; then it was possible to replace temporary wooden structures with permanent concrete ones, thus as improvement was made in one direction, improvement was made possible in another, and each feature of the work gradually assumed the proportions and permanent character originally contemplated for it.

A considerable delay was caused by the unusually wet spring of 1905. The rainy season began early in January and continued till the last of April. The last two miles of the Mesa-Roosevelt road was not completed, and the Globe road was so soft that a team could not haul over it enough feed to last them for the trip.

Absolutely necessary supplies came by wagon fifty-eight miles on the Mesa road and were packed on burros for the remaining two miles into Roosevelt, at an expense nearly as great as for the first fifty-eight miles.

During the month of March, 1905, bids were received for the construction of the dam, including the temporary works for the diversion of the river, the necessary earth and work excavation, and a concrete bridge over the spillways at each end of the dam, and on April 8, 1905, the Secretary of the Interior signed a contract with the lowest bidder, John M. O'Rourke and Company, of Galveston, Texas.

The amount of the accepted bid, based upon the engineer's preliminary estimate of the quantities involved, was $1,147,600. Since then one or two changes, principally raising the proposed height of the dam ten feet (which was warranted by the large rainfall and run off), figures for 1905, have increased the quantities somewhat over the original estimate.

The contract provides that the Government shall furnish all cement and sand used in the dam, and sell power to the contractor at the rate of one-half cent per horsepower hour; the contractor to quarry the stone for the masonry from the spillway at each end of the dam, and build the dam to an elevation of 150 feet above the original low-water level of the river, in two years from the date of the contract.

Owing to the increase in the quantities involved, some unprecedented floods, occasional interruptions in the furnishing of power, and other causes, the time for completion, to the above mentioned elevation, has been extended to May 10, 1909.

During the summer and fall of 1905, the contractors got in and erected a plant, stripped the quarries, and started driving piles for the coffer dams, etc. In November, 1905, occurred one of the largest floods known on the river, the river rising nearly thirty feet in fifteen hours, or from a flow of 2,000 cubic feet per second to one of 130,000 cubic feet per second. This flood

Power Canal Near Roosevelt Headgates

destroyed all work that had been done in the river and washed away some machinery.

Flood conditions prevailed so that little work could be done till the following April; after that progress on the excavation was continuous till bedrock was reached in September, and on September 20, 1906, the first stone was laid in the dam. Work on the masonry progressed till about December 1, when high water filled the pit and flowed over the work till April, 1907. By the middle of June, 1907, the masonry was uncovered and work resumed.

Though some delay was caused by the small summer floods of 1907, the work was favored by a following low-water season lasting till about February 1, 1908, at which time the south two-thirds of the dam had been brought up above ordinary flood level, and the north one third to above low water level. From this time it may be said that the troubles were largely over, no further necessity existed for coffer dams or for pumping, and any floods that occurred could cause but slight delay and no damage.

From February 1 to June 1, 1908, the entire flow of the river was turned over the north end of the dam, while the contractors worked on the south two-thirds; this was done in order that the gates might be set in the sluicing tunnel. These gates, six in number, with their frames, operating mechanism, and accessories, weighing in all 800,000 pounds, were constructed and erected by the Llewellyn Iron Works of Los Angeles, at a cost of over $200,000.

Since that time work on the dam has been almost uninterrupted, the number of derricks at work increased over the number possible in the limited space in the bottom, and at present (April, 1909) the top of the dam is at elevation 102 to 130, with an average of about 114 feet above original low-water level of the river; and with every prospect of reaching the 150-foot level by the middle of July. Water is now stored to an elevation of eighty-five feet, forming a lake 2,500 acres in extent behind the dam.

The cement mill is located 1,700 feet from the dam. For conveying the cement the contractors installed a Leschen aerial wire rope tramway, carrying buckets of nine cubic feet capacity at a speed of about 300 feet per minute, and spaced about one minute apart. This tramway also carries the sand furnished by the Government.

This sand is obtained at a point on the line of the tramway between the cement mill and the dam, by crushing rock and passing it through two sets of thirty-six inch diameter rolls, thence through a screen to a bin, from whence it is drawn into the buckets.

For handling much of the excavation and all of the masonry the contractors installed two Lidgerwood cableways, 1,200 feet long, two and one-fourth inches in diameter and capable of carrying loads up to fourteen tons. One day and one night shift on the first-mentioned tramway keep the bins at the mixer filled with cement and sand; and the contractor crushes the quarry waste to furnish the crushed rock for the concrete.

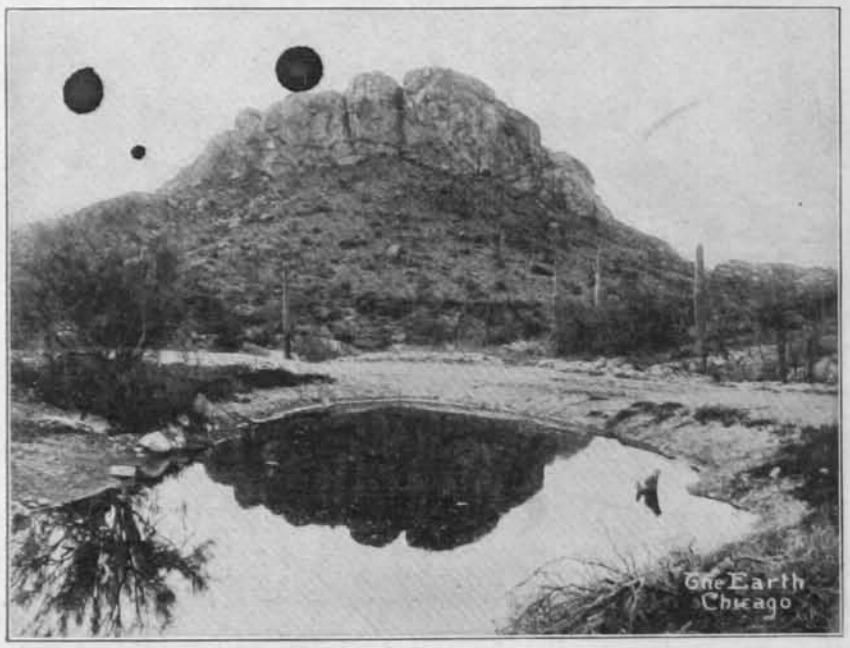
The concrete and mortar are machine-mixed, sent out in about two and one-half cubic yard batches, on a track to a point under the cableways which transport it to the dam.

One shift at night uses the cableways to get stone from the quarries down onto the dam and distributed for the day's work.

For setting the stone, one or two derricks were at first employed—the number has since been increased to five; they are capable of easily handling stones up to ten tons weight. All of the machinery on the work is operated by electricity, with the exception of a few pneumatic drills.

The stones are inspected for open seams, thoroughly washed, and set in a bed of mortar; the vertical joints then filled with concrete, great care being exercised to fill all voids. An inspector is stationed at each derrick.

The rate of progress, since soon after the



Near Government Wells Station, on the Roosevelt Road

start, has been from fourteen to seventeen cubic yards, per derrick hour. In March, 1909, five derricks laid a mass equal to ten feet high, ten feet wide and 175 feet long, each eight-hour day.

This phenomenal rate for masonry construction is due principally to the specifications under which it is being constructed The classic and the time-honored method *has* been to fill all vertical joints by hand with spalls and mortar, at a rate of progress say six cubic yards per derrick hour; in this case they are filled with soft concrete, largely dumped in. By the first method one barrel of cement is required for one cubic yard of masonry; by the method here employed .71 barrel of cement is required, a rate of progress two and one-half times as great is easily obtained, and if anything a tighter dam is secured. With eighty-five feet of water behind it, the Roosevelt dam has never shown a drop of water on the down-stream face, except what came over the top or out of the sky.

The reservoir when completed will irrigate 210,000 acres in the vicinity of Phœnix and Mesa, and the fall of the dam will be utilized to develop power which will be transmitted to the Valley and used largely to pump ground water to irrigate 25,000 to 40,000 additional acres. The permanent power house, just below the dam, is completed, and about one-half of the machinery practically ready to run. The electric power will be generated at 2,300 volts, and transformed in an adjacent house to 45,000 volts for transmission to the Valley. The transformer house is finished, the apparatus largely installed, the transmission line completed to the Valley; and step-down transformer stations, switching stations, and branch lines well under way.

About 7,000 horsepower will be developed at Roosevelt, and plans for the near future contemplate the development of twice as much more along the river between Roosevelt and Phœnix, and in connection with the canal system of the Valley.

When the work of the engineer ends, that of the farmer begins. He will have an ample supply of water, honestly and intelligently distributed. He *may* turn the water on, sit down and let Nature do all the rest; but the rich return is for the farmer who acts on the tip given at the beginning of this article, and his return *will* be rich.

The Power Probabilities *of the* Roosevelt Project

By Louis C Hill

Mr. Hill tells an interesting story of a factor that spells prosperity and progress for the Salt River Valley of Arizona, namely, the power which is to be developed on the Roosevelt project.

Among the ~~more~~ valuable assets of the Salt River Valley ~~will~~ be the power ~~which is to be~~ developed on this project, in all some 25,000 horsepower.

Of this there will be developed about 7,500 horsepower at Roosevelt, part from the water stored in the reservoir and part from the water carried in the power canal skirting the reservoir, and delivered through an inclined penstock dug in the solid rock, to the water wheels and discharged into the river below. The water from the reservoir and from the power canal will, together, flow on down the river some seven miles to another power plant where a short tunnel will save some 7,000 feet of distance and a short canal will enable us to develop about 3,500 more horsepower. This power plant is but a short distance from the main transmission line between Roosevelt and Phœnix. After delivering this energy to the water wheels in this power plant, the water will again follow down the old channel of the river some twenty miles and pass through a tunnel 3,500 feet long, developing about 2,500 horsepower more before reaching the river bed below. Almost immediately after this it is taken up again in a canal and carried down along the rocky hillsides for ten miles and dropped 100 feet more through another set of wheels, developing about 5,000 horsepower here. From this point down to where the Verde joins the Salt River is but a short distance, and just below the confluence of these two rivers, the Granite Reef dam diverts the water of the river into the main canal on the south side and the Arizona canal on the north side of the river. After passing down the canal on the south side, some two miles, one-half of the water is dropped about thirty feet into the Consolidated canal, developing about 2,000 horsepower here.

The water on the north side follows down the Arizona canal some fifteen or twenty miles, where half is diverted through the new Cross-Cut canal where it is carried about four miles along the base of the rocks and is then dropped 126 feet, developing in its fall from 3,000 to 5,000 horsepower, depending on the season of the year. The other half of the water, which continues down the Arizona canal, at the Falls of the Arizona, will develop about 700 horsepower.

On the other side of the river there is a possibility of at least one more use of the water, where perhaps some 700 or 800 horsepower can be developed.

All the power developed at these various places is brought together through a network of wires into the main sub-station and is there delivered at various points for use in the Valley.

The city of Phœnix uses about 2,000 of this horsepower.

The power transmitted to the Pima Indian Reservation near Sacaton, will pump water for the irrigation of some 10,000 acres of land. On the way down, part of the current will be taken off and used to drive the motors which will elevate the water from a number of wells south of Mesa, irrigating from 20,000 to 40,000 acres in this vicinity. Further west, in the low country round about Tempe, pumping plants will be installed to lower the ground water, acting both as drainage pumps and to elevate the drainage water to serve higher lands which will probably be used for orange groves planetd along the foothills if this water can be obtained. Still further west there are possibilities for pumping where the ground water comes near the surface.

The manufacturing plants which will start up in the Valley will be enabled to buy cheap power from the Government, and already many applications have been made for power to be used in the mining regions tributary to the Salt River Valley. In this way the power plants of this project are made to utilize that by-product of an irrigation system, the excessive fall, usually a source of expense

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"He has achieved success who has lived purely, smiled fondly, and loved with sincerity; who has gained the trust of his co-workers and the love of his fellow men; who has filled his position in life admirably and accomplished the task he set out to perform; who has left the world better than he found it, whether by an improved method, a perfect essay or a rescued soul of man; who has never lacked appreciation of that which is beautiful or failed to express it; who has always looked for the best in others and given the best he had; whose life was an inspiration, whose memory a benediction."

Thought heals the wear of existence, but it must be new thought.

The heroic man does not pose; he leaves that for the man who wishes to be thought heroic.

There are six requisites in every happy marriage. The first is faith, and the remaining five are confidence.

In explaining a theme to another it becomes luminous to ourselves.

Why not be a top notcher? A top-notcher is simply an individual who works for the institution of which he is a part; not against it.

GRANITE REEF DIVERSION DAM

By F. Teichman

Extract from an article entitled "The Granite Reef Dam and Gate Mechanism," which appeared in "Engineering News" of January 7, 1909.

The Salt River project, Arizona, irrigating about 210,000 acres of land of the Phœnix Valley, is one of the large irrigation works undertaken by the United States Reclamation Service. The Roosevelt dam will create the storage reservoir of the project. It is situated about sixty miles distant from the land to be irrigated. About fifty-five miles below the Roosevelt dam is built the diversion dam (called Granite Reef dam), by means of which the water of the river is turned into the canals at both sides (north and south) of the river. The water thus turned into the canals is that of the tributaries of the Salt River below the Roosevelt dam (especially the Verde River), and such water as is taken from above the dam to the river below the dam. There are three ways of passing this water from the river above the Roosevelt dam: (1) Through a power canal, eighteen miles long, at about the crest of the dam, an elevation 240 feet above the river level, there entering a penstock that runs to the power house below the dam and about twenty-one feet above the level of the river; (2) through a ten-foot diameter pipe penetrating the dam, starting at its up-stream face at an elevation seventy-five feet above river level and terminating in power house; and (3) through the sluicing tunnel, twelve by nine feet, that leads, at the level of the river, through the mountain side to the river below the dam. The water from the power canal passes through turbine wheels in power house; that from the ten-foot diameter pipe may in part or all be passed either through turbine wheels or directly into the river. The turbine wheels of power house drive generators (total 7,000 horsepower), and the power will be transmitted to the Phœnix Valley to be used principally for the pumping of water for the irrigation of about 20,000 acres. Of the 210,000 acres proposed to be irrigated under the project, there remain 190,000 acres to be irrigated by gravity. In accordance with the average on both sides of the river, the canal on the south side will have a capacity of 1,200 cubic feet per second; that on the north side, a capacity of 2,000 cubic feet per second.

The Salt River is a very erratic stream; its minimum discharge at the site of the diversion dam is known to have been

(Continued on page 5.)

Looking Down Power Canal

Arizona's Remarkable Development

By Governor Richard E. Sloan

Arizona is on the eve of a remarkable development. With the Irrigation works completed and nearing completion under the supervision of the Reclamation Service of the Government there will soon be under irrigation approximately 400,000 acres of land of unsurpassed fertility, capable of supporting, directly and indirectly, at least 400,000 people.

This acreage, through the development of the available water supply under the governmental and private projects now contemplated, ought to be doubled within ten years.

The copper industry promises to increase in importance for many years to come.

By means of these two industries, agriculture and mining, without regard to others of great promise, I set the mark for our population before 1930 at not less than one million. The nation has no occasion to fear our ability and fitness for immediate statehood, or to entertain a doubt as to our ability to keep pace with the more progressive states in increase of population and wealth, and the maintenance of the highest character of citizenship.

Photograph by David B. Edmonston, Washington, D. C.

Richard E. Sloan

GRANITE REEF DIVERSION DAM.

(Continued from page 4.)

fifty-five second-feet; its maximum flood discharge may have been 200,000 second-feet, and the variations are rapid. The presence of the Roosevelt dam will considerably reduce the maximum flow at the site of the diversion dam by retaining the flood water above the dam or, with the reservoir filled, by equalizing the flow at flood times. To take care of the still large flood quantities, without raising the water too high above the diversion dam, the latter was made long, 1,000 feet. At both ends of the dam it abuts against the intake structures.

The intake structure for the south side of river, is the head of a canal of 1,200 second-feet capacity. The sluiceway of this structure has a floor about forty feet wide; it falls down stream 1½ per cent, and at the line of the dam it is eight feet lower than the crest of the dam. At the river side, the sluiceway has a wall as high as the dam; at the land side, a wall fifteen feet higher than the dam. This latter wall is penetrated by nine openings, five feet high by seven feet wide, for the nine regulator gates, the sill of the gates being four feet below the crest of the dam, and from four to three feet higher than the floor of the sluiceway. The sluiceway has at its lower end and in line of the dam two sluice gates, nine feet high by fifteen feet wide, sills eight feet below the crest of the dam.

To keep the sluiceway clear of sediment, the two sluice gates are either kept open slightly or they are opened periodically, for a short time. To make the sluicing most efficient, with the least amount of water, both sluice gates are made to open and close simultaneously. The water that is made to pass under the sluice gates for the sake of keeping the sluiceway clear is not wasted: (1) As long as the river carries only what is required for the two canals little sediment is carried by the river and little sluicing will be required to keep the sluiceway clear; (2) then there are a few independent irrigation canals that take their water from the river below the diversion dam, and they are entitled to a certain stipulated quantity of water, and, if this is not flowing over the dam, it can be turned into the river below the diversion dam, by means of the sluice gates; and, (3) at a point of the river about half way on the front line of the irrigated land the rock comes close to the surface of the river and forces the underground water (water from under the dam and the drainage of the irrigated lands above this point and on both sides of the river) to the surface At this point a low diversion dam of a temporary nature is built, that turns the water into a canal, the lowest of the irrigated area, and part of the irrigation project.

The intake structure at the north side of river is of the same type as the one described for the south side of river, with slight differences in detail. On the north side, the canal has a capacity of 2,000 second-feet; the sluiceway is about eighty feet wide; there are eighteen regulator gates and four sluice gates.

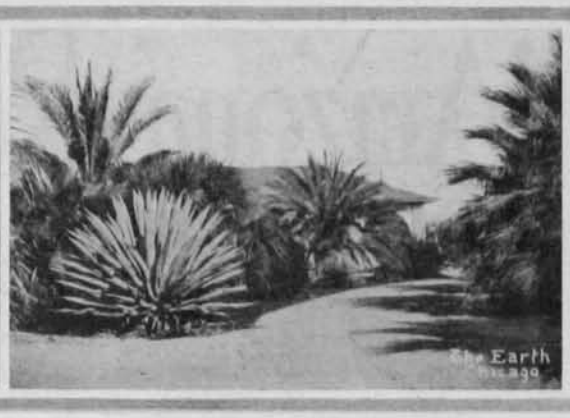
The diversion dam and the intake structures are built of concrete. The gravel of the river formed one ingredient. The boulders, excavated from the river bed, were embedded in the concrete to reduce the cost per yard, wherever the nature of the concrete work permitted this. Steel reinforcement was used largely in the intake structures and in the joints of the dam sections. All the construction work at the site of the dam was done by the the Government under force account.

Remember that when you're in the right you can afford to keep your temper, and that when you're in the wrong you can't afford to lose it.

A Corner in the Capitol Grounds, Phœnix, Arizona

A Country Home

A Palm-Bordered Boulevard



A Private Driveway

The Salt River Valley of Arizona

By B. A. Fowler

Mr. Fowler, president of the Salt River Valley Water Users Association tells the readers of THE EARTH of the possibilities and probabilities of the Salt River Valley, where the farmer finds what he seeks—a land of abundant harvests and ready markets; where the mechanic and laborer find steady employment and receive high wages; where the man whose brain serves him, and the artist, and the dreamer, agree that it is "very good."

B. A. Fowler
President of the Salt River Valley Water Users Association.

The Salt River Valley of Arizona has been known for centuries as a land of fertility, productivity, sunshine and, in every respect, one to be desired. That many years ago a prehistoric people thickly populated this section, is proved by the plough of the industrious farmer, which so many, many times has turned up to the sun, the utensils and implements of a long-dead and almost forgotten race. These were a people of no mean attainments, whose engineering skill levelled hills and plains, projected and constructed canals and irrigation works, and carried therein the liquid stream which fertilized and enriched. Here and there throughout the Valley are also to be seen to-day mounds, the ruins of Pueblos—communal buildings, where these ancient people lived and were wont to gather for safety and comfort as well. Within these small hills, now perhaps grown over with grease wood and sagebrush, or around whose bases the alfalfa grows and cattle feed, are contained archæological gems of stone and pottery hidden amid the halls and chambers of old Aztec or Toltec ruins, that would thrill the heart of a scientist and delight an enthusiastic archæologist.

But, while these mounds, standing amid plains almost as level as a floor, with here and there prehistoric irrigation systems and old edifices, now little more than a memory, tell of an ancient civilization, so ancient as to be almost forgotten and living only in tradition, they, to-day, look out upon a new twentieth century civilization with its governmental system of irrigation, constructed on a large scale, with canals little less than rivers, whose waters first impounded, then diverted by huge dams, guarantee a permanent and regular flow of enrichment to the land; which, under intelligent direction of the industrious farmer, produces crops so great in quantity, so rich in quality, and netting such large profits, that the eastern farmer hesitates to believe the simple unvarnished facts when told him in all honesty and truth.

This is the Salt River Valley of to-day. In length sixty miles; in width from fifteen to thirty miles; 1,000,000 acres of arable and irrigable land, if only the water sufficient to irrigate it could be conserved. Here the Government has spent over $6,000,000 in constructing one of the finest irrigation projects in the world. A project, which, within ten years, if the citizens of this Valley pursue a broad-minded and wise course for betterments and expenditures, will easily become the ideal irrigation system of the United States. This irrigation district tentatively includes about two hundred thousand acres, which in the future will be added to, in all probability, as fast as can be done safely and wisely.

With another impounding dam located in the Verde River; with all our water supplies and sources of water carefully conserved; with the district well saturated by several years' continuous irrigation; with less wasteful and more economical methods of distribution; with cemented ditches, underground pipes, etc.; with more scientific methods of agriculture; with a more intelligent conservation of soil moisture; and with a larger experience and more critical knowledge of the what, when, where and how to irrigate, the duty of water can undoubtedly be increased very nearly 100 per cent, and with two acre-feet of water we may be able before many years to achieve better results than we now do with four acre-feet.

In this government irrigation project are included hundreds of miles of canals and laterals; concrete division, and headgates; a 600-foot concrete overflow diversion dam across Salt River, nineteen miles east of Roosevelt for power purposes; a 1,100-foot concrete overflow diversion dam across Salt River, twenty-eight miles east of Phœnix, for diverting water into the two great irrigation systems of the Valley, the north and south sides; a concrete rock and masonry impounding dam, 285 feet high, 235 feet wide, at river bed, 172 feet from heel to toe, 1,080 feet across at top, including spillways 200 feet each, with a splendid roadway along the top, a connecting link between the government roads on either side of the canyon, all eighty miles northeasterly from Phœnix, and to which a splendid mountain road, itself a marvel of engineering skill, amid grand and rugged scenery, has been built at the cost of $250,000; a nineteen-mile power canal, costing $500,000, with a capacity of 250 second-feet; a $220,000 cement mill, with a capacity of over four hundred barrels daily; the reservoir area over twenty-five square miles, with capacity of 1,300,000 acre-feet, a full three years' supply for the Valley below; type of dam—masonry arch, gravity section from foundation, radius 400 feet; power developed 4,400 horsepower from power canal, 3,000 horsepower from reservoir (at dam site) and fifteen or twenty thousand horsepower possible on the river between Roosevelt and Phœnix; a thoroughly equipped power house and transformer house; electric transmission lines and towers from Roosevelt down to and into the Valley, including an extension to the Sacaton Indian Reservation; pumping plants of fifty horsepower each with which to raise the large underground flow, and thus add to and supplement the normal flow of the river; and to all this, did time allow, we might add much other expensive work, but of less importance.

Here in this Valley, the dairyman can pasture his stock on green feed twelve months in the year; the new farmer immigrating here with his herd of cows may in less than thirty days' time receive cash at the creamery for his milk and cream; the expert in growing melons, asparagus, tomatoes, squashes, cucumbers, celery, onions, chili, strawberries and other small fruit, will receive a maximum return for minimum labor; and the rancher growing alfalfa can harvest from four to six crops a year; while the sorghum, wheat, barley, oats and corn all grow as if they loved to. Wheat can be sown in October, fed down in January, harvested in May, the stubble immediately plowed in, and corn planted on the same ground, which can be har-

Washington and Second Avenues, Phœnix, Arizona

Suburban Homes Near Phœnix

vested the following October. The same is true of barley and sorghum, one crop each on the same ground within twelve months.

One large beet-sugar factory is already completed at Glendale, nine miles northwest of Phœnix, with a capacity of 1,000 tons of beets per day; and another on the south side of the river, is a hope of the early future. Now, if, as many believe, two crops of sugar-beets can be successfully grown where only one grew before, what a bonanza for both farmer and manufacturer! But whether or not such proves to be a fact, isn't it an inspiration to live in a land of such possibilities?

A marked peculiarity of this climate is the amount of saccharine developed in products of all kinds. By the help of the Agricultural Department, the luscious date has been imported from North Africa, and evidently has found the equal of its natural habitat; while one season's experiment with egyptian cotton seems to have demonstrated that this, too, will become a staple and profitable product. Delicious oranges are here grown, which ripen for the earliest market and command the highest prices. This season several carloads brought, at auction in New York City, the highest price ever paid for "Washington navels," over $2,700 per car. No better lemons are produced anywhere; and grape fruit orchards have not been able to supply the widespread and increasing demand for their product. Olives bear heavily and are a profitable crop. The Valley olive oil is pure and delicious. Almonds, peaches, pears apricots, figs and grapes of various kinds thrive here. With an altitude above sea level of about eleven hundred feet, the Salt River Valley enjoys a climate superb for eight months in the year and remarkably healthful, even if somewhat warm, the other four months. The summer heat is dry and sunstrokes of man or beast are almost unknown, as well as diseases peculiar to children in the summer. Malaria and typhoid are rarely heard of. The winters are ideal—free from snow and ice, cold winds and storms, the thermometer rarely going below thirty degrees above zero and almost never below twenty.

Here are to be found more ostriches than in all the United States besides; while cattle, horses, mules, hogs and sheep develop and fatten rapidly. The wind velocity rarely exceeds five miles an hour, and the average rainfall is about seven inches. An abundance of water is now assured by the government irrigation works, paid for, under the terms of the National Irrigation Act, in ten annual payments, without interest, commencing on completion of the project, about two years hence; the pro rata cost per acre will be between $25 and $30, or about $3 per year. Without revenue from electric power this cost would probably be not less than $35 per acre, or $3.50 per acre per year. But from one contract alone, the Pacific Gas and Electric Company, of Phœnix, we will receive about $50,000. a year, which, with other contracts now made, or to be made, will reduce the annual land payments very materially.

For good water for domestic purposes wells are sunk varying from fifteen to one hundred feet, depending on elevation above the Salt River.

Phœnix, the county seat of Maricopa County and Arizona's capital city, is located on the north side of Salt River, which runs through the center of the Valley, one of the richest agricultural sections of the world, already enjoying rare agricultural achievements, and with greater possibilities for the future. The city has a population of over twenty thousand, steadily growing with an increasing tide of immigration. People are cosmopolitan—representative of every state in the Union. The county courthouse, city hall, and new Carnegie library each occupy an entire square, the latter located in one of the small public parks. Schools, normal, public and private, deservedly rank high; churches, clubs and fraternal organizations of all kinds flourish. Banks include national, state, savings and trust companies. Newspapers issue excellent morning evening and weekly editions. The Trinity Episcopal Church is about to erect a $50,000 edifice. A beautiful building with fine furnishing is now being erected on a choice, centrally-located corner, with $100,000 subscribed, in an eleven-day campaign, for a Young Men's Christian Association. The Government is about to erect a $140,000 federal building. A $25,000 Water User's Association building is now under way. The Phœnix National Bank has recently newly equipped its fine banking house; the Valley Bank has just moved into the finest banking building in the Southwest, a single story, steel reinforced concrete, modelled after the best banking architecture of the East; while the National Bank of Arizona has doubled its capital and completed plans for a beautiful new four-story building in the very center of the city, to be ready for occupancy by January 1, 1910. The spirit of progress is in the air in every direction; never in the history of the city has there been so much building, public and private, business and residential.

The territorial capitol, costing $125,000 was built without scandal or even breath of suspicion. The annual territorial fair is held in November, at Phœnix, where 10,000 people gather daily without drunkenness or disorder. The mile track is said to be one of the fastest in the United States. No betting or pool-selling is allowed on the fair grounds; gambling is prohibited in Arizona by territorial statute; local option districts are established in Maricopa County, which is the same size as the state of Connecticut.

Mesa, population one thousand five hundred, "Gateway to the Roosevelt dam," is a growing town, beautifully located on the Phœnix and Eastern Railway, about eighteen miles southeast of Phœnix. The farming lands in all directions are rich, fertile, well watered and produce record-breaking crops.

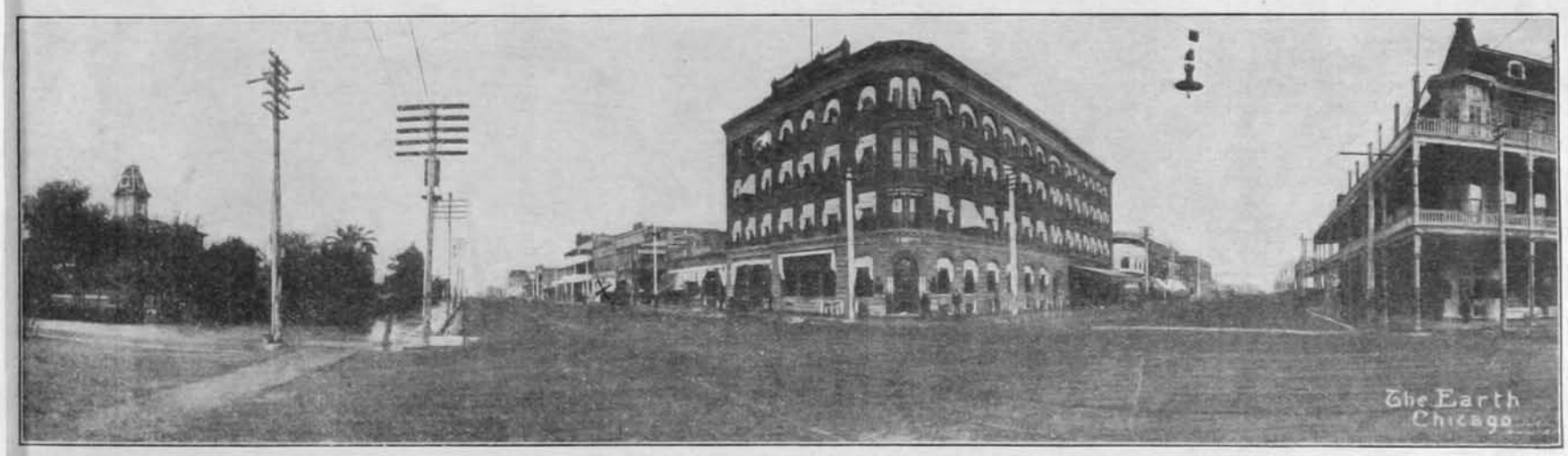
Tempe, population two thousand, also on the Phœnix and Eastern Railway, nine miles southeast of Phœnix, is in the midst of a rich farming country. Here is located the territorial Normal School, with its fine buildings and beautiful grounds.

Glendale, a thriving village nine miles northwest of Phœnix is celebrated for its remarkably fertile soil, the centuries' deposit of Cave Creek wash, designated by the Bureau of Soils of the United States Agricultural Department, as "Glendale loess." The beet-sugar factory just completed, capacity 1,000 tons daily, is here located and is engaged in a successful campaign.

Buckeye, down the Valley thirty miles west, is in a district noted for its grain, alfalfa and fat cattle. Still farther west ten miles, Arlington is rapidly making a reputation for its crops of alfalfa seed and its egyptian cotton.

The Salt River Valley as a whole has a population of about thirty thousand. Here, as elsewhere, all public utilities, modern improvements, church, educational, fraternal and social advantages contribute to the individual and public weal and a better and broader civilization.

This beautiful Salt River Valley, with its framework of mountains on every hand, located as it is, nearly two hundred miles south from Ash Fork, on the Santa Fe Railway, and thirty-five miles north from Maricopa, a station on the Southern Pacific, is never seen by the through transcontinental traveler. Good branch roads, however, connect with the above railway systems named, whose Phœnix city stations adjoin; and it is a hope of the early future, that through this great Valley, wonderfully rich in agricultural possibilities, ranging from corn of the temperate zone to dates and figs of the semi-tropic regions; with its wealth of immense herds of cattle, horses and stock of every kind; for a radius of fifty or one hundred miles, surrounded by mountains where Nature



Washington and First Avenues, Phœnix, Arizona

Phœnix Residences

has stored her mines rich in gold, copper almost inexhaustible, and many other minerals; with its superb winter climate, said to be unsurpassed the world over; a section of territory requiring and furnishing a heavy tonnage of incoming and outgoing freight—it is, I say, a hope of the early future, that through this Valley will be a transcontinental railway, which will enable the outside world more easily than in the past to reach our doors, gauge our actual conditions, our possibilities, our quality of citizenship and our fitness for statehood.

And here, to such a land, a land of sunshine and fascinating possibilities, do we invite the leisure class, the farmer, the capitalist, the homeseeker, as well as the home-builder, the man who works with his hands, or he who works with his brains, to join us in creating, and building up, a commonwealth, rich not alone in agricultural and mineral wealth, but rich in character, rich in public spirit, rich in a love for the beautiful in art and Nature, rich in the highest ideals of manhood and womanhood, and rich in an unselfish patriotism and love of country—in short, rich in all that goes to make a nation great, and a civilization grand.

An Open Letter

By B. A. Fowler

Through the Salt River Valley at the present time, the air is filled with an atmosphere of ozone, hopefulness, and optimism.

The Government Irrigating project calling for an expenditure of about $7,000,000, will be complete in two years or less. Already over $6,000,000 have been put into constructive work, the details of which you will find in the articles contributed by various writers in this issue of THE EARTH.

SHOWING ENTERPRISE AND PROGRESS.

The Young Men's Christian Association of Phœnix two years ago secured subscriptions amounting to $108,000 for the purchase of a building location, the construction of a $60,000 building, which should cost $20,000 for furnishings, together with an athletic field of ten acres. They bought city block No. 93, located between the Methodist Episcopal church and the Central Schoolhouse, near the center of the city, 300 by 300 feet, for $32,000, with Van Buren street on the north, First avenue on the east, Monroe street on the south and Second avenue on the west.

A portion, 225 by 160 feet, of this block was sold to the Government for the location of a federal building, the southeast corner was donated to the city for a public park, the northwest corner was sold to the Salt River Valley Water Users' Association for a water temple, and the southwest corner was reserved for the Y. M. C. A. building. While this block cost $32,000, the association has already received in cash and good subscriptions over $35,000 and has a splendid location free of incumbrance and without expense to the association.

Excavation for this building is now going on and the construction will be pushed vigorously until completion. The Water Users' Association will begin construction of its building next month, and it will probably be ready for occupancy not later than October 1, and the Y. M. C. A. building a few months later. The last Congress appropriated $140,000 for a federal building, and this will go up on the east half of the Y. M. C. A. block, construction to begin next year, if rumor be true.

A FINE NEW BUSINESS BUILDING.

The Noble building, on the corner of Adams and First streets, a steel reinforced four-story structure, already is rented and will be completed within the next few months. The name of this building has been changed to the Securities Trust building.

There soon will be under construction a $100,000 steel reinforced, concrete bridge at the foot of Center street, across Salt River, where lies 35,000 acres of as fine soil as there is in the world, all of which will become thereby directly tributary to the city of Phœnix. This bridge, 2,100 feet long with 900-foot approaches, the longest of its kind in the world, will hasten colonization and settlement of this land, besides also furnishing connection with the Sacaton Indian Reservation, where there are 4,000 acres of cultivated land and about 3,000 Pima Indians.

THE PHŒNIX AND EASTERN.

The Phœnix and Eastern Railway, a connection of the Southern Pacific, will undoubtedly be completed within the next two years through the Gila Canyon, and then Phœnix will be on a through line to the East and West.

THE SANTA FE CUT-OFF.

The Santa Fe Cut-Off from Phœnix to Los Angeles, by way of the town of Parker, across the Colorado River, thence to Bengal on the main line of the Santa Fe, runs directly through the wonderful mineral country of Vicksburg, Salome, Bouse and Winchester, all of which is said to be one of the richest, if not the richest, gold and copper sections in this Territory and in the United States as well. This road will be completed within the next six months. Phœnix is the natural distributing point for all this great section of rich mining country, and already is beginning to feel the effect of an increased volume of trade.

A SUBURBAN RAILWAY.

The people of Maricopa County are considering the granting of a franchise to a suburban railway company, which undoubtedly will be granted. This will be from sixty to seventy miles long and it is the ambition of the promoters to reach the orange district on the east, the sugar-beet district on the north and northwest and the great ostrich, hay and grain district on the west. Over this road, passengers will be transferred by day, and freight by night. The country is perfectly level the entire distance and, in fact, there is no place where anything more than a scraper is needed to do the leveling. This road will hasten the building of suburban homes and inevitably increase suburban realty values. It will reach the little town of Glendale, nine miles northwest of Phœnix, where a $1,000,000 beet-sugar factory is located and where there is a magnificent sugar-beet country in which beets of such a quality can be raised as to beat the world, both as to saccharine purity and tonnage.

The amount of freight, consisting of oranges, beets, alfalfa, hay, grain cream and a multitude of other things, is surprising when you get the detailed statistics. The population of Phœnix is fixed by the new directory just published as between 20,000 and 25,000, and rapidly growing. The natural suburban traffic for such a city is not small; indeed, it is a large and valuable asset for any street railway. While the rural population is somewhat sparse at present, yet it is steadily increasing, and we have about 6,000 tourists here in the winter, who would patronize the road a great deal Our charter will be liberal, encouraging rather than limiting our ambition to make extensions.

A SPLENDID WORK.

To care for tubercular cases there has

Palm-Bordered Driveway, Leading to the Home of B. A. Fowler

A Grain Field in the Salt River Valley

just been organized the Arizona Bethesda Association, capitalized at $250,000, divided into 10,000 shares of $25 each, assessable $25 per year for four years after issue. Anyone can become a share holder. This is a non-dividend paying, philanthropic enterprise for the good of humanity, and we hope will be generously supported by broad-minded givers in the East, when they come to realize what a burden they unwittingly often place upon this people of a new country. That all may have a further knowledge of this subject, we advise those interested to communicate with J. A. Gessinger, Phœnix, general manager of the Arizona Bethesda Association. Following is a list of the local directors, medical staff and advisory board:

DIRECTORS: H. B. Wilkinson, Chalmers and Wilkinson, attorneys; Geo. M. Halm, vice-president Valley Bank; B. A. Fowler, president Water Users Association; Lloyd B. Christy, cashier Valley Bank; J. A. Geissinger, pastor First M. E. Church; Dr. J. C. Norton, territorial veterinarian; O. H. Christy, president high school board; H. C. Yaeger, city councilman; C. T. Hirst, manager realty department; D. B. Heard Company; H. J. McClung, vice president Phœnix National Bank; General A. J. Sampton, ex-U. S. Minister to Ecuador.

LOCAL MEDICAL STAFF. Dr. J. W. Foss, Dr. Win Wylie, Dr. Willard Smith, Dr. W. C. Ellis, Dr. W. W. Watkins, Dr. J. M Swetnam, Dr. Louis Dysart, Dr. Roy. E Thomas, Dr. A. S. Hawley, Dr. E. Payne Palmer; Dr. Francis H. Redewill, Dr. O. E. Plath, Dr. R. W. Craig.

ADVISORY BOARD: Joseph H. Kibbey, ex-governor; Edward Kent, chief justice; Gov. Richard E. Sloan, associate justice; Fletcher M. Doan, associate justice; John H. Campbell, associate justice; Frederick S. Nave, associate justice; E. S. Clark, Attorney General; L. W. Coggins, mayor of Phœnix; Dwight B. Heard, real estate and Loans; W. J. Murphy, Phœnix Trust Company; S. J. Rogers, superintendent, M. E. Mission.

RAILWAY ORGANIZED.

Another railway has been organized from Phœnix, forty miles to the west throughout the Buckeye and Arlington country, which will undoubtedly be completed this summer. This opens up a rich hay, grain and stock country, which has been handicapped heretofore by lack of transportation facilities. In addition to the brief mention of mining interests, the readers of the "Salt River Valley Special" may be interested to know that many rich gold and copper "strikes" have been made to the northeast and west of Phœnix, which, in due course of time, will contribute materially to the increasing volume of commerce and business to pass through this Valley in the early future.

The Salt River Valley will be the market to supply these mining districts with agricultural products, and the wealth of the mines will, to a large extent, return to the farmers and the business men of this Valley, adding to its wealth, its growth and its commercial importance, and inevitably fixing it as the great railway center of the Territory.

STILL ANOTHER.

Still another railway projected and about to be constructed within the next few months, known as the Ingleside and Scottsdale Street Railway, will run twelve miles to the northeast. This passes through some of the finest orange land in the Valley and reaches the highest altitude of the settled sections in the vicinity of Phœnix. Close at hand are the well known resorts on Camel Back Mountain, known as Echo Canyon, Robber's Roost, etc., the Ingleside golf links and the picturesque Hole-in-the-Rock. Also but a short distance away is the new cross-cut power canal, which at its terminus, not far from Hole-in-the-Rock, has a fall of 120 feet, where will be located one of the power houses of the project, capable of developing from 4,000 to 5,000 horsepower.

AN ACTIVE CAMPAIGN.

During the coming fall, special efforts will be put forth to organize an active campaign of colonization for two large tracts of land, that of the Bartlett-Heard Land and Cattle Company, south and southeast of Phœnix, and the so-called Chandler tract, south of Mesa. Both of these tracts will be opened up under very favorable conditions, each to have a trolley line running to and through it, with good water rights, exceptionally fertile soil and splendid locations. From every point of view, these lands are desirable, especially to the enterprising farmer, and have reached a high stage of cultivation, producing to-day some of the finest hay and grain ever grown in this Valley.

RESIDENCE BUILDING.

The amount of residence building going on at the present time exceeds anything in the history of the Valley. The residential section is extending into the suburbs, as stated before, and this growing movement to get out of the city for home building will rapidly increase with the development of the suburban railway system mentioned.

(Continued on page 40.)

When the Angelus Rings

By B. A. Fowler

WHEN the Angelus rings in the morning,
Or when it rings at night,
It brings to me joy and gladness,
And strengthens my heart to do right.

IT calls to the morning's duty,
It tells me the night is gone,
While the birds are trilling their anthems,
To the Lord of the night and the morn.

OR when the sun is setting
Behind the clouds of gold,
And the work of man and woman
Is as a tale that's told;

THEN the music of its ringing
Brings thoughts of God above,
Lifting my heart to Heaven
To drink in heavenly love.

THEN Heaven seems nearer and dearer,
In my heart, my home, my life,
And my soul is inspired and quickened
To overcome sin and strife.

THUS ring, blessed Angelus, ring,
Ring duty at morning's light,
Ring love and home and Heaven
When you ring your message at night.

Phœnix, Arizona.

Indian School, Salt River Valley

A Comparative Picture

By General Archibald J. Sampson

The following article is from the pen of General Archibald J. Sampson, a man who has traveled far, and seen much and whose opinion everywhere carries weight with it. General Sampson has served as United States Minister to Ecuador, but is now a resident of Phenix, Arizona.

Gen. Archibald J. Sampson

From personal observation, we think the Salt River Valley can learn little of interest or benefit from irrigation of the Valley of the Nile in Egypt. Political and economic conditions there are unlike those in this country. Egypt is governed by Great Britain (it is not the purport of this article to describe the, in some sense, triple government of Egypt) with absolute control of the water supply, recognizing no rights of the individual.

This arbitrary control has been a benefit to Egypt, but would never do in the United States. It has proved a benefit there *because* of the lack of money among the tillers of the soil and their ignorance of political affairs and poor business qualifications.

Many have a false idea of the width of the Valley of the Nile. From Assuan to Cairo, a distance of some five hundred miles, the greatest width is nine miles, this about sixty miles above Cairo. Other places only two or three miles wide and in others, practically nothing, as there is no tillable land.

In contrast with this is our Salt River Valley, eighty miles long and twenty miles wide, with as rich soil as the richest of the Nile. Below Cairo is the delta that contains the greater part of the irrigable land of Egypt.

Along the Nile the farms are not fenced, and the homes of the *fellahs* (farmers) are found in small villages, not on the farms, for there is no room, many of the farms containing no more than two or three acres. The *fellah* plows his ground with a wooden stick, such as was used before A. D. entered into chronology, or stirs it with a hoe. He cuts his crop with a sickle or pulls it out of root by hand. The grain is beaten out with a flail or tramped out or crushed out by a roller drawn by oxen or water buffaloes. Cleaning a large canal is done by a number of laborers gathering up the sediment with hoes and carrying it out in large baskets, which they carry on their shoulders. Steps are made in the side of the canal for them to walk up and deposit the sediment on the bank. In Egypt the canals are, as a rule, below the level of the land, so that gravity cannot be used, hence there are various devices to lift the water onto the land. Such are the *shaduf*, the *sakiyeh*, the Archimedean screw, the *natili* and pump.

The *shaduf* is on the same principle as the swing pole for a well, which, I presume, all have seen—a bucket, a short pole fastened to it, a pole for the swing, a cross support for it to rest on, a weight on the short end and a *fellah* to pull down the pole until the bucket reaches the water. fill it, then raise it up and empty it. By this device they can raise water only about five or six feet, whereas sometimes they have to raise it twenty feet or more, hence three or four *fellahs* are necessary, each raising to his level and emptying it into some receptacle and the last one onto the land. A man is able to run it only about two hours at a time. so two are assigned to each *shaduf* and they can raise enough water to irrigate half an acre of land in a day, but the pay is in harmony with the results accomplished, for they get 15 to 20 cents each per day of ten hours.

Anyone who has ever seen what was known as the coffee huller threshing machine, where the grain and straw all came out together, can easily understand when I try to describe the *sakiyeh*. Two cog wheels are placed together, with an arm fastened to the upper one, to which an ox, a water buffalo or a camel is hitched, and round and round he goes like a horse in an old fashioned cider mill. Connected with the lower wheel is a shaft that passes underground, beyond the circuit of the animal turning the wheels and connects with another horizontal wheel which it turns. The cogs of this wheel fit into the cogs of a vertical wheel which it turns. This vertical wheel has a number of boxes or pockets on it, perhaps a dozen, which dip down into the water and come up full as the wheel revolves and as each cup reaches the uppermost point of the wheel it empties the water into a trough that carries it to the irrigating ditch and onto the land. It is estimated that there are fifty thousand of these in use along the Nile. We saw many of them in operation. All cannot afford to own one, hence have to rent, for which they have to pay from $1.50 to $3.50 an acre, each irrigation, owing to the height of the lift which is from twelve to twenty feet, usually. If the animals used are owned by the crop grower, the cost is much less. Wheat, corn and hay require two irrigations and cotton, four.

The Archimedean screw I need not describe, for you know what it is. In use there it is placed on an angle of about thirty degrees, the lower end in the water, while to the upper end a crank is attached which is turned by one or two men. One man can irrigate between one and two acres a day by this method.

The *natali* is simply a bucket with four short ropes attached and is operated by two men lifting water and emptying into the trough leading to the land.

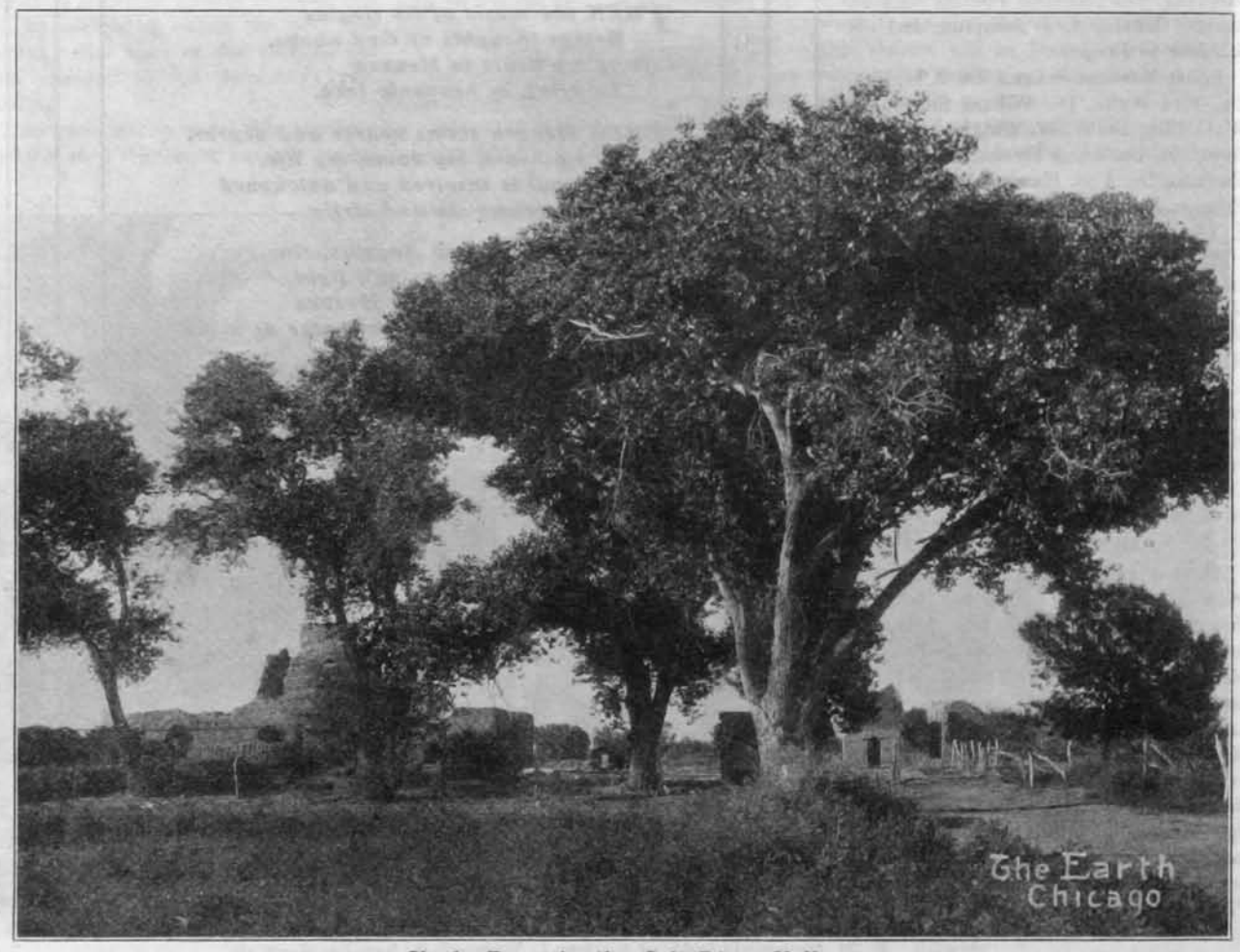
The pump needs no description. Its cost and work are much in proportion to the size and horsepower engine used. The most common is an eight-horsepower engine. Pumping plants are frequently placed on scows in the river. These go from place to place as employed. When the lift is not over ten feet and the farmer has an interest in the pump it costs him about $1.90 per acre each irrigation. If not a part owner of the pump it costs him $3 to $4 dollars per acre, each irrigation.

In this Valley no such devices are needed, for the water runs to the land by gravity. One man can irrigate one acre in an hour, sometimes more or less, owing to the head of water and the character of the land. He receives $1.50 a day for his work. Thus will be seen that the cost per acre to get water onto the land in this Valley is not much to compare with the figures herein before given, showing the cost in the Valley of the Nile.

After thirty days after the rise on the Nile commences (about the middle of July) the people who depend on the overflow are anxious to see the water recede so they can plant. If the water stands more than forty days it means bad results to all planters. We fear no such contingency in this Valley as we take the water when we want it and shut it off when we don't want it. Until recent years no reliable system of gauging had been established in Egypt, to advise of the coming water. Now gauging stations are established at Khartum, Berber, Wady, Halfa and Lake Victoria and the English engineers can tell approximately the water supply coming, and notify those dependent upon it, so they can govern themselves accordingly. The most celebrated gauge on the Lower Nile is on the Island of Rhoda, which we visited. In a well, twenty to twenty-five feet deep and about fifteen feet in diameter, stands a graduated pillar or column, the bottom of which is connected with the Nile, so that the ebb or flow of the water is measured and shown by an indicator on the pillar.

Aside from the subject of irrigation was something which we could not look at without interest, at least, Close by this gauge we were shown the identical spot (so claimed) where the infant Moses was hid in the bulrushes. We don't vouch for the truthfulness of the claim.

(Continued on page 40.)



Shade Trees in the Salt River Valley

A Salt River Valley, Arizona, Home and Alfalfa Field

Land Values as Related to Water Supply

By Dwight B. Heard

In Arizona, water is life, and the United States Government, in storing the flood waters of the Salt River for the use of the wonderfully fertile lands of the Salt River Valley, is engaged in one of the greatest home-making movements in the history of this nation. Without water, these lands are without value; with the sufficient water supply for irrigation, now absolutely assured, their productive quality is so great that it is hard to estimate their value.

The lands of the Salt River Valley have been formed as have the lands of the famous Valley of the Nile, by the wash for countless centuries of the best soil from the mountains. This silty deposit forms a soil easily cultivated, and gives astonishing returns when carefully and intensively farmed.

Several years ago it was my privilege to visit the Valley of the Nile and I found there nearly the same qualities of soil as exist here in the Salt River Valley, with a very similar range of crops; in fact, there are many points of rather startling similarity in the two valleys, not least among them being the ruins of centuries old civilization, found both in the Egyptian Valley and in the Salt River Valley of Arizona. Here are the ruins of an ancient people and direct evidence that centuries ago they cultivated intensively this fertile Valley. History tells us that in 1540, when Coronado, with his band of hardy Spanish adventurers, traversed Arizona in search of the seven famous cities of Cibola, the ruins of buildings and ancient canals, discovered in this section, were an evidence that this Arizona civilization and irrigation preceded the Spanish conquest of Mexico by many centuries.

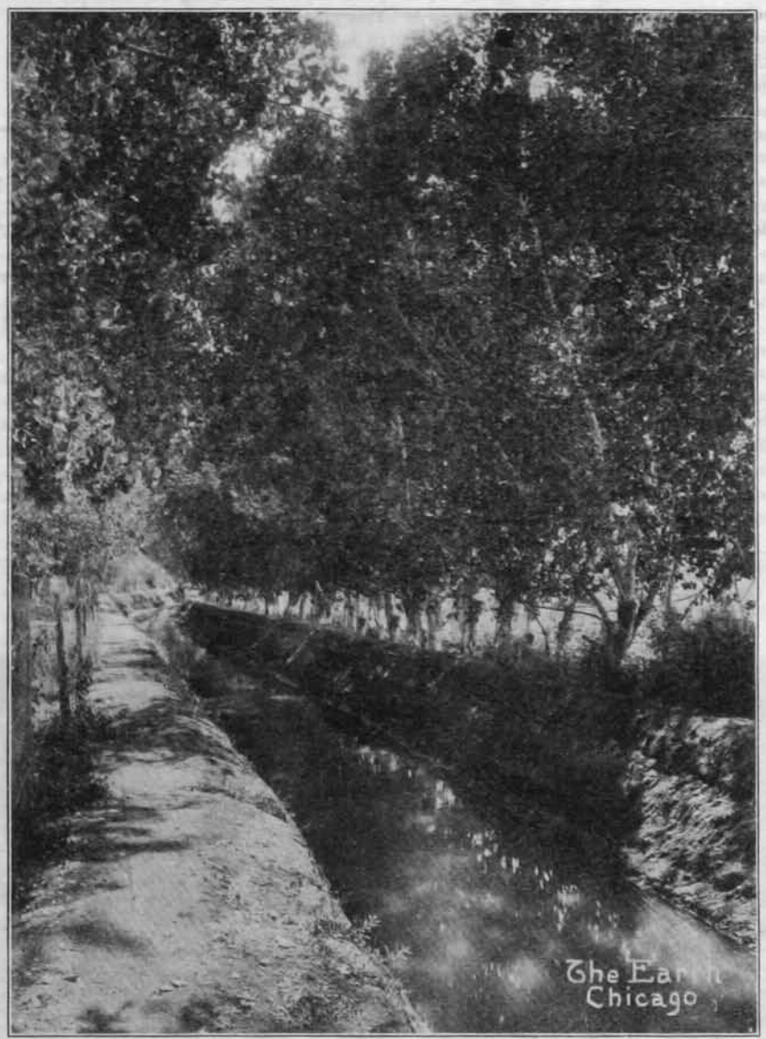
It is practically impossible to wear this soil out, as in depth it averages over twenty feet throughout the Valley.

The prudent and clear-headed man bases the value of land upon the annual amount which it will produce when properly cultivated, in excess of the labor spent upon it. This test can be applied to the lands of the Salt River Valley with results that will convince the most skeptical, that on the basis of their productive qualities, Salt River Valley lands are very moderately priced to-day. That they are bound to increase greatly in value is certain as we are fortunate in having a market for our agricultural and horticultural products far beyond our present ability to supply.

The lands of the Salt River Valley are divided into four distinct classes. Near the mountains, with the general silt deposit throughout the Valley, is mixed a granite wash from the hills, which forms a soil of considerable grit and mineral matter, excellent for fruits and exceptionally desirable for orange growing; our most productive groves being located in this section. In this section there is almost no frost, and oranges are ready for market from Thanksgiving to January 10, when they are practically without competition and command the very highest price.

These lands close to the mountains are remarkably well drained and have a fall of about forty feet to the mile, are easily worked, and will eventually support an immense population, as ten acres in oranges, when properly handled, in the Salt River Valley, produce an income sufficient to support any ordinary American family in comfort.

Near Glendale, about nine miles northwest of Phœnix, the overflow for centuries from Cave Creek, which has now been restrained, has produced an alluvial deposit of great richness, known as the Glendale loess. Other sections of the Valley have a similar soil and this class of soil has been found particularly desirable for the growing of cantaloupes, sugar-beets, alfalfa, grapes and deciduous fruits.



An Irrigating Ditch, Salt River Valley

In the bottom lands of the Valley we have a soil known as Maricopa sandy loam, exceptionally fine for truck farming, berries, cantaloupes and asparagus, all of which industries are practiced with very great profit in this section. Farther back from the river we find a heavy soil with some clay, of very great richness. This soil when properly handled, produces immense crops of grain and alfalfa and is largely used to pasture herds of beef and dairy cattle. One can get an idea of the immensity of the dairy industry in this section from the fact that, at present, over ten thousand cows are being milked and over nine creameries, with six branches, are in successful operation.

It is hard for the average eastern man to understand the immense range of products grown in this Valley, but as this great diversity of crops, together with our certain water supply, our perfect climate and a remarkably rich soil, has much to do with our land values, I am going to give, very briefly, a list of the various industries in which a man can engage in the Salt River Valley with profit:

Fattening and raising beef cattle; dairying, cheese making; poultry and egg industry; ostrich growing; hog farming; sheep raising, both for mutton and wool; stock and race-horse breeding; mule breeding; honey making; grapes—growing for wine, raisins and for shipment as fresh grapes; berry farming, including strawberries, blackberries and logan berries; cantaloupe and watermelon growing; raising alfalfa for hay, alfalfa seed; wheat, barley, oats, millet, corn, kaffir corn, sugar-beets, sorghum, sugar cane, cotton, potatoes, both irish and sweet.

The following garden truck:

Peas, beets, cabbage, celery, cauliflower, tomatoes, spinach, peppers, squash, summer squash, pumpkins, lettuce, radishes, beans, onions, asparagus, cucumbers and carrots.

He can raise eucalyptus trees for fuel or he can grow lemons, oranges, tangerines, grape fruit, loquats, dates, almonds, and olives.

(Continued on page 40.)

A Glendale Sugar-Beet Field, Glendale Beet-Sugar Factory in the Background

Beet-Sugar Industry *in the* Salt River Valley

By R. P. Davie

The sugar-beet industry in the Salt River Valley has passed the experimental stage and is now one of the resources of this wonderful Valley. To one not familiar with the culture of sugar-beets and their manufacture into sugar, it is difficult to approximate the value of a sugar factory to a community, the mere profit in the crop itself being but a small percentage of the benefits.

The growing of sugar-beets is like truck gardening. No one can succeed in growing sugar-beets and weeds in the same field. The preparation of the soil and growing of the beets under the charge of the skilled field superintendents of the sugar company reduces farming to a science. The company will not furnish seed to any grower unless his seed bed is in good tilth, and the contract requires that the beets be produced under the direction of the superintendents of the sugar company. This means that the ground will be leveled, properly planted, frequently hoed and cultivated. A few days' delay in irrigating or cultivating might be expensive to the farmer, and therefore he is taught the necessity of doing to-day that which should be done to-day. This is a lesson he invariably applies later to other crops, and it has been the experience of all communities that wherever a sugar factory was successfully established, the general class of farming rose perceptibly, the farmer learning that freedom from weeds and frequent cultivations increase his crop very materially.

In addition to the indirect benefits as outlined above, the direct benefits are many and very material. Fifty per cent more grain is frequently raised on a field that had beets on the previous season, and almost any crop does better following a beet field. It is not claimed that the beets add anything to the soil, but the quality of farming necessary to raise sugar-beets and the subsoiling that results from plowing them out, makes the subsequent crops much better. This, together with the freedom from obnoxious grasses and weeds is undoubtedly the reason for the better crops.

In mentioning the beet industry in the Salt River Valley, it will be necessary to make comparisons with eastern factories, like Michigan, Wisconsin and Colorado where the planting is all done in the spring and the harvest is in the fall, and where, as is the case in Michigan and Wisconsin, the farmer is dependent entirely upon the elements for his success. He may put his seed in after having the ground prepared as well as possible and then fail to get the moisture to bring it up; or he may get it up, spend the money for thinning, get a splendid stand and have a drouth come along and ruin his crop—making it more or less of a gamble as to the net results in the fall. In the Salt River Valley the farmers rely entirely upon irrigation and are under a system of canals controlled by the Government and augmented by the magnificent Roosevelt reservoir, which will hold 1,300,000 acre-feet of water, or about five feet deep over every acre of land in the Valley. As the planting is done in the winter as well as in the spring and summer, the farmer can have beets coming almost every month in the year.

The most costly part of raising sugar-beets is the hand labor, such as thinning and hoeing, and as this country is surrounded by Mexican and Indian families, the labor for that work is not only reasonable but abundant, and this particularly makes it a very attractive field for this industry. Owing to climatic conditions, the laborers can live in tents the year around, hence there is no necessity for expensive houses for the laborers.

As to the productiveness of the soil, there are beets here now that will run thirty tons to the acre, and very few failures. Owing to the many days of sunshine the beets are rich in sugar and it will therefore be profitable to the manufacturer, which insures the future of the industry. As it takes only about five months to mature a crop of beets, it is possible for the farmer to follow the beet crop with corn, peas or almost any soiling crop and then plant beets the following six months and have one crop of beets and one soiling crop each year.

There is now completed at Glendale a plant capable of slicing 800 tons per day. This plant is thoroughly modern and up to date and has cost $1,000,000. There will undoubtedly be other factories built in the Valley as there is sufficient land to warrant the erection of at least three factories and possibly more. The company operating the factory at Glendale has established automatic dumps at the various stations. They control factories in other states and have had many years of practical experience in the business.

As this country consumes about three million tons of sugar annually and as we manufacture, counting Puerto Rico and Hawaii, less than 1,500,000 tons annually and as the production increases less than 100,000 tons per annum, it can be seen that unless there is adverse legislation, which is not anticipated, the beet-sugar industry has come to stay, and owing to the cheap labor, all-year-round growing season and wonderful fertility of the soil, the Salt River Valley of Arizona is the most attractive beet-growing country in the world.

Means Millions

A successful experiment in the production of sugar-beet seeds has been made in the Salt River Valley.

If the experiments of Lafayette Myer, agriculturist of the Southwestern Sugar and Land Company, continue to result as successfully as they have this year, and there is every reason to expect they will, the coming of the sugar people into this section, it is now apparent, means a great deal more for the Salt River Valley than anybody, even the sugar people themselves, ever anticipated. It not only means all that the successful operation of a sugar factory means, which is a $500 value to sugar-beet lands, but it means an added seed by-product to the beet crop, of

Harvesting Glendale Sugar-Beets

approximately $100 per acre. And that means a doubling of the value of all choice sugar-beet land to approximately $1,000 per acre. This is not written for "boom" literature, but is strictly a news story, for it deals with facts not made public until yesterday, but it ought to stiffen the market for sugar-beet lands, nevertheless.

Up to this good hour the raising of sugar-beet seed has not been successfully accomplished in America, though the beets for sugar grow in many places as well as anywhere on earth. Practically every pound of sugar-beet seed planted in America, and there is annually 1,000,000 pounds of it used, comes from a limited area in Germany, where the raising of it is made a specialty. Its cost is about 10 cents a pound, or $100,000 for a season's planting of the American fields. Phoenix may well hope after two or three years of experiment, to pick this plum from Germany and the best part of it is that it will be an inexpensive by-product, almost clear profit, the seed product being just that much added revenue to the sugar crop of each acre. It is almost too good to be true, but the present indications are that it is true, and General Manager Davie last night was wearing a smile that almost equalled the one acquired by the successful working of the factory during its first week.

A lengthy article in this paper some months ago, an interview with an importer of best seed, told the reasons why the seed has never been successfully matured in this country, or if so it lacked in germination. There was also recited how the industry had been specialized by German scientists, how results had been secured and how failure had resulted in this country. Those things are proved facts and need not be repeated at this time, more than to state that in Germany, where seed is raised, the beets produce no sugar and it takes two years to raise the seed. Selected seed only is planted and the beets grown are then selected, kept over winter in a silo and planted in the spring as are seed onions. In maturing the seed crop the beet rots away, or at least loses its sugar content, so the only product is the seed and that comes once in two years.

From the experiments of Mr. Myer, there is now reason to hope that seed planted in this Valley in November, or earlier, will produce mature and perfect seed the following summer, with a wasting of only from ½ to 1 per cent of saccharine matter; so the skilled farmer may raise a crop of seed and a crop of sugar each year, "on the same vine," so to speak. It is estimated that beets will produce in the neighborhood of a ton of seed to the acre, which at 10 cents a pound means $100 per acre added income for the slight expense of a little more careful attention and the harvesting of the crop. It means the adding to the Valley beet growers' crop each year a revenue equal to a two years' crop of the German seed growers.

The discovery was in the first place practically thrust upon Mr. Myer. The Arizona soil felt that the psychological moment had come to make another star play and it made it.

Mr. Myer planted a considerable acreage last November, having in mind only the securing of beets for the early beginning of the sugar campaign this year, and to encourage the farmers to early planting. When the November beets began to attain a fair size, with one accord they began to shoot up the seed stalks. Mr. Myer and Mr. Davie were depressed. They didn't want seed. What they wanted was beets,

(Continued on page 40.)

A Country Road in the Salt River Valley

More About *the* Beet-Sugar Industry

By J. J. Gould

The sugar-beet is a factor in general farming, which to-day, the up-to-date farmer must consider and take into account, if he hopes to get the greatest returns from the lands that are steadily advancing in value, all over the United States.

High-priced land means more intensive cultivation, the abandonment of the methods of the last generation, and adoption of the most complete system that man's mind has solved. Smaller acreage and better farming is the watchword of the future, and to him who first realizes the full import of this, will the best results accrue.

As a crop that gives the best results financially, the sugar-beet stands in the front rank. It seems to adapt itself to the different climatic conditions that prevail from the state of New York westward to the Pacific Ocean, and as far south as Mexico, and northward to the Province of Alberta in Canada. The cool, wet springs and falls of Wisconsin and Michigan produce a sugar-beet of good sugar content and yield. The high, dry climate of the Colorado section also produces a beet of exceptional quality. Farther west the Pacific Coast slope produces its sugar-beet with satisfactory qualities. But, coming to the Salt River Valley of Arizona, the climatic conditions prevailing are again different, and the soil being very rich in the necessary constituents, the sugar-beet comes nearer reaching perfection than it does in any of the beet-growing sections of the United States.

The climatic conditions prevailing in the Salt River Valley are seemingly ideal for sugar-beet culture. Sunshine, that most necessary factor for the successful growth and development of sugar content, prevails in the Salt River Valley for 300 days of the year. Moisture falls at a time when the young plant can use it, always in small amounts at a time, the amount necessary to develop the crop being supplied by an irrigation system that is one of the finest in the world, and is under the control of the United States Government Reclamation Service.

The planting period is reversed from that of the eastern sections of the United States. While the farmer of Michigan, Wisconsin and Colorado is harvesting his crop in the months of September, October and November, the Salt River Valley farmer is sowing his beet seed. Ideal weather prevails at this time, warm days and cool nights, not cool enough to interfere with germination, but heavy dew at night and sunshine in the day time, hot enough to wilt the weeds turned out by the cultivators. Through the winter months, beets are planted steadily up until April, when it is considered advisable on account of warmer weather prevailing, not to plant during the summer months. Here we have an ideal condition for the farmer as regards his planting period, which extends for eight months, instead of having to be done in thirty days, as is the case in the northern sections.

The growing period is extended over the winter months, and the winter months of the Salt River Valley is the period of most beautiful weather to be found in any part of the United States. There is always sufficient warmth during the day to produce a steady growth, with gradually rising temperature in the spring months to bring the beet to early maturity. With moisture conditions absolutely under the control of the farmer, the closing off of the irrigation water is all that is necessary to produce a condition that develops the sugar content to a high degree. Beets testing from 16 per cent to 17 per cent sugar are the usual result in the Salt River Valley.

The period of harvest is equally as advantageous to the farmer in the Salt River Valley as is the planting period. Beets are harvested during the months of May, June and July, and weather conditions do not hurry the farmer in the same way he is hurried to get his crop out before it freezes up, as is the case in Wisconsin, Michigan and Colorado. This is a very important item to consider, and from the growers' standpoint is one of the most vital to his business.

Good roads are the rule in the Salt River Valley and transportation to the factory is made easy. We have not the rains that destroy roads, and when they are once put in good condition, remain so for a much longer period than in the eastern states.

The labor problem is solved for the raising of beets in the Salt River Valley. Unlimited labor—Mexicans, Indians and Japanese—being available at reasonable prices. The Government of the United States is employing this help in building the Roosevelt dam, and pronounces it good labor. This is a factor of no small importance to be taken into consideration.

The market for sugar-beets is already established, one large factory, having a capacity of 800 tons per day, being now in operation and the assurance from the Southwestern Sugar and Land Company is that it will build more just as fast as conditions will warrant. Ultimately three plants will have to be established to handle

(Continued on page 41.)

An Orange Grove in December, Salt River Valley, Arizona

Orange Industry, Yield and Profit

By George W. Cowgill

Very justly Arizona makes the claim that it produces the finest quality of oranges in the world, and the earliest navels grown in the United States. Mr. Cowgill, secretary Phœnix Board of Trade, furnishes our readers with facts and figures to prove the claim.

The sales sheets of the New York market for the days Arizona oranges were sold during December, 1908, and January, 1909, is herewith produced; in each instance the *highest* price is quoted. The following figures were furnished us January 10, 1909, by the *Fruit Trade Journal* of New York.

	California.	Florida.	Arizona.
DECEMBER, 1908.			
7	3.90	5.10	9.20
14	3.90	3.10	9.20
16	4.00	4.35	7.40
18	4.15	3.60	7.00
21	4.15	3.90	7.00
23	3.85	3.25	6.80
28	3.75	3.50	6.40
30	3.30	2.65	6.50
JANUARY, 1909.			
4	2.95	3.50	6.70
5	3.05	3.50	6.00
7	2.60	2.40	3.30
11	3.70	3.55	6.20
13	3.45	2.65	3.70
16	3.60	2.70	8.90

Arizona fruit has never had any fertilization during the eighteen years we have raised oranges. The incredulous reader may inquire why we have not given results for each day during the month. Our answer is, we have given you prices each day our oranges were on the market. The reader should remember our production has never been more than 150 cars, a very small matter as compared with our sister state, shipping 45,000 cars.

As a further evidence of the quality of our fruit, the Westfall Fruit Company on December 31, 1908, published in the *Fruit Trade Journal* a statement as follows: From November 30, to December 30, we sold for the Arizona Orange Association of Phœnix, Arizona, through the Connolly Auction Company, ten carloads of Desert and Cactus brands for a gross of $21,764.30—$2,176.43 per car or $5.66 per box.

Our navel orange begins to ripen the first week in November, and the entire crop can be shipped before Christmas. All of the oranges which are now being shipped from Arizona, come from about 600 acres of groves situated near the foothills north and northeast of Phœnix, in the Salt River Valley. About three-fourths of the trees are Washington navels, and the balance are Valencias and a few Jaffas.

The Valencias are very hardy and the tree is large in size. Last September the board of trade exhibited a box of Valencias at the Sixteenth National Irrigation Congress, that had been on the tree since the preceding December. These oranges were thin skin, perfect in formation and color, and were as sweet as our Washington navels at Christmas time. This was a satisfactory experiment of two trees in one of our local groves, and promises to be an "eye opener" in the orange industry of the Valley.

The Los Angeles *Times*, December, 1908, said in part, "The competition in the orange industry is a friendly one between the various districts of the Great Southwest—the arid-America districts. And, verily, the more arid, the greater advantage seems to be indicated by the continuous premiums that are paid for the Christmas oranges grown in the Salt River Valley of Arizona. An illustration of this occurred in the New York market, Friday of this week as shown by the *Times'* telegraphic reports. The Arizona Desert Brand sold at an average of $5.10 per box, being fully $2 per box higher than the prevailing prices on any Califorina navels offered in the same sale. There is a reason for this."

No more perfect description of the Salt River Valley orange belt could possibly be made than is made by Wickston's *California Fruits*, an authority on the subject. Mr. Wickston says:

The surface of the country should have a southern exposure, and better still, be backed on the north by high hills, and should be reasonably free from winds and frost. The hotter the locality, the better. An altitude from 800 to 1,600 feet is best. Be sure to have an abundance of water that can be relied upon for irrigation—at least one inch to every five acres of orchard; more will be needed when the orchard grows old.

All our district is fully covered by this requirement, and the figures above given, prove the wisdom of the requirement.

The acreage is, however, limited, as all good things are. The proved orange belt comprises about ten thousand acres. It is earnestly advocated, however, that oranges may be grown on 100,000 acres of this Valley land. Among these advocates we find several orchards of 1,000 trees, planted ten and fifteen miles from what is now termed the "proved belt."

Orange tree planting is mostly done in February and March. No less than 388 acres were planted during this season. More would have been planted had the young trees been available.

We now have three local nurseries who are making a specialty of the navel, and more than 100,000 trees are now in lath houses.

The value of these lands are not fully appreciated by our home folks. It is a surprising feature to note the large number of Riverside and Redlands growers, who have bought virgin orange lands at $200 per acre. More of this choice land is still available. We recall the sale of one of our local producing groves at $1,000 per acre.

The cost of bringing a grove to production, exclusive of the original purchase price, will be found as follows:

FIRST YEAR: Preparing the ground for trees, $5; cost of trees, $83.60. The cost of trees for one acre is computed on a basis of seventy-six trees to the acre, planted twenty-four feet apart, with the supposition that Washington navels are purchased at $61.10 each acre. The proper tree for planting is a two-year-old bud on a three-year-old root. These can be obtained for 60 cents each, but inspected trees from California cost from 90 cents to $1.10.

Cost of planting, $2.60; cost of water, $1.60; maintenance for first year, $25; tree protectors at 10 cents each, $7.60. The total cost for the first year is thus $125.10.

SECOND YEAR: Cultivation and maintenance, $40; water, $1.60; total for second year $41.60.

THIRD YEAR: Maintenance and cultivation, $35; water, $1.60, or $36.60 for this year.

To permit the trees to bear at the end of the third year is a mistake, and keeps them from maturing, according to the best authorities. The buds should be clipped off.

FOURTH YEAR: Cultivation and maintenance, $40; water, $1.60. Total for the fourth year $41.60. This year each tree should yield one-quarter to one-half box of healthy, fine oranges, and from then on, the grove should be self supporting.

We supply herewith a table based on careful investigation as to the returns, that can be obtained from a healthy grove in proper condition, as proved by actual figures from growers of large experience. The boxes per tree shown in the table refer to "packed boxes" ready for shipment and not "loose boxes."

It takes three "loose boxes" to make two "packed boxes." According to the table the yearly output computed from the returns of this year's crop would range from $836.32 per acre for a six-year-old grove, to $2,580.96 per acre for a

(Continued on page 15.)

The Grape-Fruit Industry

By Joseph T Trotter

Few men are in position to speak with so much authority upon the subject of this article as is Mr. Trotter, the owner of Southacre ranch, a most delightful spot in a most beautiful section of the famous Salt River Valley of Arizona—Mr. Trotter's grape fruit took first prize at the St. Louis World's Fair.

The growing of pomelos or grape fruit in the Salt River Valley is an industry that gives great promise of being not only successful but most remunerative.

The natural condition of soil and climate, with intelligent cultivation, have enabled us to grow a finer quality of fruit than has been grown in any other locality in this country, if not in the world, and the present supply cannot begin to fill the demand. The trees begin to bear fruit at four years, and at six should be paying a profit above running expenses, and at ten years a first-class orchard should be paying a profit of $500 or more an acre. The trees are usually set twenty-two feet apart each way, or ninety-six trees to the acre, and may be purchased already budded from nurserymen, or grown from seed and budded on your ranch, which is the most satisfactory way if you can afford to wait the necessary three years.

From a ten-year-old tree on my ranch I have taken eleven boxes of fruit in one year, at an average price of $3.25 cents f. o. b. cars at Phœnix. This, of course, cannot be quoted as an average, but gives you an idea what a tree will do when properly cared for.

The markets are always calling for more fruit than we can possibly furnish, and I frequently have to refuse car lot orders at a good price because I have not enough fruit to fill them.

I have never sold a box of first-grade fruit for less than $3 f. o. b. Phœnix, and usually obtain from $3.25 to $3.50, and sometimes $4.50, and 90 per cent of the fruit is first class.

The grape fruit tree is hardier than the orange, and I have never lost a single grape fruit tree by frost or other causes.

We have no insect or fungus pests and are entirely free from scale, and a stringent inspection and quarantine law which was passed at the last session of the legislature, reduces to a minimum the danger of any being introduced here in the future.

It is difficult to give any exact figures as to the cost of bringing an orchard into bearing, as so much depends on individual conditions and methods; but should say it would cost between $300 to $400 per acre, above the cost of the land. The same applies to the running expenses after coming into bearing, but I should think from $75 to $100 an acre per annum would be a safe estimate.

To sum up: The soil and climatic conditions are ideal for the successful cultivation of grape fruit.

The grape fruit raised here is superior to that grown in any other place. We obtain higher prices at our orchards for fruit than most growers east or west receive in the far eastern markets.

We cannot begin to supply the demand, and need more settlers to come in and plant grape fruit. Grape fruit is and will be a profitable crop, paying from $300 to $500 net profit per acre.

Salt River Valley Grape Fruit

THE ORANGE INDUSTRY.

(Continued from page 14.)

ten-year-old grove, and at the latter age an orange tree doesn't stop producing, but is just getting into full bearing. The table follows:

	Boxes Per Tree.	Boxes Per Acre.
Fourth year	½	19
Fifth year	½	38
Sixth year	1½ to 2	152
Seventh year	2 to 3	228
Eighth year	2½ to 3½	266
Ninth year	3½ to 4	304
Tenth year	5 to 6	456

The lemon industry has not advanced as rapidly as the orange. We have one very productive grove, with numerous sprinklings of lemon trees in orange groves. All do well and produce a smooth, juicy, thin rind lemon. There are several trees of sicily lemons, which are producing prolifically.

The success of the lemon is now an assured feature of the citrus industry.

Men are tattooed with their special beliefs like so many South Sea Islanders; but a real human heart, with divine love in it, beats with the same glow under all the patterns of all earth's thousand tribes.

—*O. W. Holmes.*

I have also seen the world, and after long experience have discovered that ennui is our greatest enemy, and remunerative labor our most lasting friend.

—*Justus Moser*

How Does It Seem To You?

It seems to me I'd like to go
Where bells don't ring nor whistles blow,
Nor clocks don't strike, nor gongs don't sound,
And I'd have stillness all around.

Not really stillness, but just the trees'
Low whisperings, or the hum of bees,
Or brooks' faint babbling over stones
In strangely, softly-tangled tones.

Or maybe a cricket or katydid,
Or the songs of birds in the hedges hid,
Or just some such sweet sounds as these
To fill a tired heart with ease.

If 'tweren't for sight and sound and smell
I'd like a city pretty well.
But when it comes to getting rest
I like the country lots the best.

Sometimes it seems to me I must
Just quit the city's din and dust,
And get out where the sky is blue!
And say, now, how does it seem to you?

—*Eugene Field.*

The Olive in Arizona

By C. P. Munger

Olive culture and the manufacture of its products in Arizona has, until the past few years, caused little or no attention in the commercial world; but this is a condition that will not long continue.

An estimated number of olive trees in California, in 1897, was placed at 2,500,000 while that of Arizona was hardly 25,000; in the Salt River Valley there are some 125 acres, consisting of groves from two to twenty-five acres and with several hundred trees planted along the ditches of ranches.

The Salt River Valley is peculiarly fitted for the olive industry, in that it has the temperature suited to the flavoring of the olive with an unusual and unsurpassed flavor, both for oil and ripe and green olives. The average mean annual temperature should not go below 57 degrees and the average low temperature for any length of time 41 degrees, and at no time should it go below 14 degrees, if so, serious results will follow.

The soil is the next important matter to be considered; mistakes have been made by setting out groves on soils which were not suited to their cultivation.

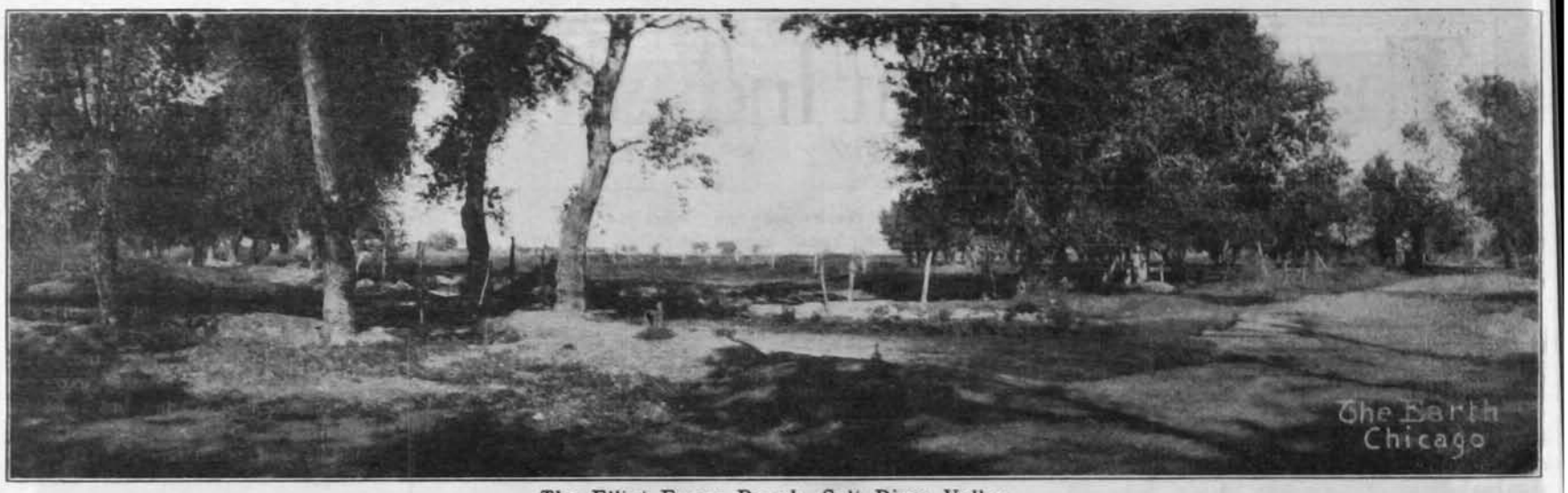
The soil should be in a well drained section, preferably of a light sandy or gravelly loam, though the adobe soil is good. On the lighter soils the trees grow much faster, are quicker at starting and are in bearing much sooner than on the heavier soils. On the adobe soil they are slow in starting growth, in maturing and are later in bearing, though when once in bearing they produce a good heavy crop and the olive is of a fine quality.

Gold Medal, St. Louis Fair, for Munger's Salt River Valley Olive Oil

The ground should be well plowed and leveled so as not to have too great a fall, as it washes out the soil and reduces the productiveness of the trees.

There are various methods used in setting out the grove; several can be used. The trees may be set out in a square, twenty feet each way, and when ten to twelve years old, every other tree may be removed; or they may be set out twenty feet apart running in the row, and forty feet between the rows and at the required age take out alternate trees; or they may be set out in a square forty feet each way, making the trees forty feet apart in the row and forty feet between rows, and no removal of trees is necessary.

Trees can be secured from a reliable nursery or can be started from seeds or cuttings, the later is preferable as it takes too long from the time seeds are planted until they are ready for setting out in the



The Elliot Evans Ranch, Salt River Valley

grove, it taking from one to two years for seeds to germinate.

Cuttings can be had, first from well matured wood and should be from three-fourths to one and one-half inch in diameter and from fourteen to sixteen inches long and should be secured during December and January. They should be trimmed and planted in trenches in loose, sandy soil in a shady place; a lath-covered nursery is preferred. The cuttings should be irrigated regularly and frequently and the soil should be worked to produce a dust mulch to retain the moisture in the ground, care should be taken to see that the cuttings are never irrigated by spraying as it is very detrimental.

In the first setting of cuttings they may be placed about two or three inches apart, and remain so till the latter part of March, when they should be re-set at that time they can be set permanently or still kept in the nursery, but if so, they should be planted at least six feet apart. In the fall they may safely be set permanently in the grove. There are, of course, other methods, but space limitations prevent our giving more than the one cited.

In the purchasing of trees of a nursery, care should be taken to secure them from a reliable one, that will guarantee the trees to be the varieties asked for, and also to secure varieties that are the best for all around uses, both for soil and olive pickling as some have little or no oil in them and others are too coarse and woody for pickling.

The Manzanillo and Mission varieties are the best for both uses and the best producers. The trees should be from three-quarters to one and one-half inches in diameter and from four to six feet high; these can be secured for $350 per 1,000 trees.

The grove should contain two or more varieties, though two will be sufficient to produce the desired results, as authorities claim that they do better and produce larger and a more average crop when mixed varieties are set out.

In setting out a grove, if possible, the work should all be done at the same time, the men digging the holes should precede, followed by those setting the trees and following the setting they should be irrigated; it is important that a run of water is had at the time of setting out of the trees.

If trees are to be set out along a ditch, they should be set from three to four feet from the ditch line.

The new grove will need first-class attention as to irrigating, as much depends on the start made by the trees after setting out; irrigating by furrows, from two to six furrows between each row has been proved to be the best and most satisfactory and economical, as it takes only about one-half the water flooding does and new groves wash with flooding to quite an extent.

Irrigate every two to three weeks and cultivate well after each irrigation. The olives take about the same amount of water as do the oranges to produce a good crop, though they can get along with a great deal less in time of scarcity of water and live where an orange would die or be seriously set back.

A first-class plan is to plant alfalfa between the rows of trees in the grove, after the trees are set and well started; level the grove as in alfalfa fields, throw a border a foot out each side of the tree row, so that the trees may be irrigated at any time, other than by flooding the grove. When trees are a year or more old this can be done away with and one border thrown up along the tree row, between the trees, as the roots of the trees are then old enough to have extended out into the land and will take up water when the alfalfa is flooded.

The practice of high pruning is advised; the tree should be headed at about two to three feet from the ground.

The looks of a grove depends entirely on the care taken of it from the start; trees should be well trimmed and topped in a proportionate manner according to the growth of the variety; each year the trees should be pruned at least thirty days before the sap begins to run, all suckers around tree and all coarse growth in the tree should be cut out and the rank growth of the tree cut back, no long limbs in either the sides or the top of the tree should be left and the tree should be well rounded and topped according to the growth of that particular variety of tree, though care should be taken not to prune too closely.

In the growing of cover crops, such as alfalfa, it is well to rotate, that is, after three or four years of alfalfa between the trees, plow it under after the cutting season is over, though allowing it to grow for a few weeks after the last cutting, so as to have a good green fertilizer. Irrigate by furrows for a season and again sow to alfalfa.

Olive culture has been proved a financial success by those who have given their groves as good attention as their orange groves, alfalfa, etc. Several groves from two to twenty-five acres in size have had returned "net to the grove" from $50 to $100 per acre from olives alone, producing from two to five tons to the acre.

The olives are contracted for on the tree so there is no expense of harvesting the crop, as the picking is done by the buyers of the olives, all returns being a net return to the grove.

The picking season begins from October 15, to November 1, and lasts until March 1, or to March 15, of each season.

The oil produced from Arizona olives has slowly been making a name for itself on account of its unusually fine meaty, nutty flavor and being free from the usual oily and greasy taste so many oils have.

The pickling of both ripe and green olives is practiced and are considered by all to be the best of their kind as one does not have to learn to like them, but at once they find favor and quantities are eaten for they are free from the bitter taste of the olive in its original state and do not have that stringent taste so often met with. The ripe olives are pickled when a purple color and when through the process are from a dark purple to a deep reddish color; the so-called "green" are not picked until a light red color and so have the oil in them and are more of a food than a mere relish, are nutritious and have elements of the most energizing and sustaining nature.

The crop of the season 1908–9 amounted to some 200,000 pounds, which was picked from about three-fifths of the total acreage of the Valley and some of the groves bearing, produced not over a half crop. Were the groves all cared for as are those producing the larger crops, the amount could be increased to 500,000 pounds and make all of the groves a paying venture.

That the culture of olives is and can be made a success we give some results:

One grove of eighteen acres with only moderate care, but with good irrigation, cropped this season $1,050, about $60 per acre on olives alone.

The small groves of from two to ten acres have been the largest producers in proportion to the acre. An acre of trees all set some forty feet all ways, having plenty of root space and air and light for trees, produced $135. Another of five acres, the grove in fair shape, $250. One five-acre tract on Olivette ranch in a high state of cultivation, twelve years old, produced twenty tons of olives, a return of $600, besides producing a crop of alfalfa, first year growth, of some $200 value.

A young grove will begin producing in the lighter soils at the third year, the returns being from 10 cents to 25 cents to the tree, almost being the cost of the care of the grove and the water, and from then on they increase very materially each year, and at from eight to ten years old and over, they will, under first-class care and cultivation, return from $50 to $100 per acre on the olive crop alone.

In setting out a ten-acre grove one would pay from $60 to $250 per acre for the land; the cost of the trees would be from $175 to $350 for the whole acreage, depending on the distance of setting the trees apart. With alfalfa between the rows one should, the first year, have a return of $300 to $400 for hay alone; the second year, the alfalfa should be more productive, and at the third year, one should have a return of from $75 to $150 for the olive crop, in addition to the return on hay.

A well kept grove in a state of high cultivation, at from five to seven years, returns annually from $400 to $700 on olives and from $300 to $400 on alfalfa.

As the present acreage is now so limited the supply of olives is inadequate to meet the demands for the manufactured products, it is very evident that there can be no over production of olives in the Valley. The equipment of the oil mill and the pickling plant is up to date in every respect and has a capacity to handle many times over the present production of olives in the Valley, and the demand for the manufactured products is greater than the supply.

The yearly amount of olive oil and olives produced being very small, it makes the cost of production high with the running of such a plant. It could be run at the same per cent of expense with an output of ten times the present crop, and the setting out of several hundred acres of olive trees in the Valley would be a good thing all around.

The setting out of new groves would be a welcome addition to the present acreage in the Valley and also a source of profit to the grower, as he is sure of an average yearly crop and of a market for his fruit without any expense to himself.

The olives of the Valley are all contracted for on the tree, the buyers doing the picking and hauling to the mill.

It is a clean, pleasant and profitable occupation, and the groves of the Valley having no diseases to cause expense of spraying, etc., or to affect the value of the crop, one can fear no losses along that line.

The cultivation of the olive and the manufacturing of its products are industries in their infancy in Arizona, but in time are due to become among the largest here and to compare favorably with that of other countries engaged in the same pursuits.

"Man cannot live by bread alone." Are not many of us trying to do that? We forget that there is no such thing as standing still. We must retrograde or progress.

You better be an is-now than a has-was, and as for a not-yet-but-soon, why he is always one.

Deciduous Fruits and Berries

By Ernest Hall

Hall Brothers are the largest growers of deciduous fruits, berries and asparagus in the Salt River Valley. On Hall Brothers' place and on the Blue Ribbon, ten acres belonging to Ernest Hall, they have over 225 different varieties of deciduous fruits, berries and grapes. Visitors are always welcome at the ranch and information, as to the best varieties of fruits and their care and culture, is cheerfully given.

The chief reasons why the growing of deciduous, as well as citrus, fruits is so profitable and successful in the Salt River Valley are the climate, the water and the soil, and nowhere in the United States is there such a combination of the three in such ideal quality for the growing of the various fruits as there is here. Some of the places have equally as good climate, others a good water supply, others have good soil, but we have all three, and the best that can be had of each. The Lord has given us the climate and the soil, and the Government, in building the Roosevelt dam, is giving us an assured water supply at all times. The highest range of summer heat, the sunshine, the remarkably dry air, insure the very highest quality of fruit, and the soil and water insures the quantity, and, with our very long growing season, depth and richness of soil, and plenty of water, our trees are so strong and thrifty that they will mature wonderfully large crops each and every year. Another great advantage with our dry atmosphere is the absence of practically all blight, scale and fungus diseases which are the bane of the fruit growers in the humid climates. It also permits the open-air drying of the various fruits, though, at the present time, but little of that is done in this Valley for the reason that there is not sufficient quantity produced to supply the demand for fresh fruit at prices which are much more remunerative than when the same fruit is dried.

We grow on our place the following fruits and berries: Peaches, pears, plums, apples, crabapples, apricots, nectarines, cherries, quince, figs, blackberries, grapes, red, purple and black raspberries, logan berries, dewberries, strawberries, and, for the birds, mulberries. We also have a few orange, lemon, pomelo, citrangs and date palms, which, however, are not yet in bearing.

The peach ranks first in importance among the deciduous fruits in this Valley, and we have between thirty-five and forty different varieties of them growing on our place. Commencing with the last week in May, we have different varieties ripening practically each week until the latter part of November, and we have picked them as late as December 15. We receive as high as 15 cents per pound for the earliest peaches, and late peaches bring as high as 7 or 8 cents, while the average price the season through last year was a little over 5 cents a pound. From seven-year-old trees we picked as high as 250 pounds of first-class fruit. In quality we will pit our peaches against peaches grown anywhere in the world. The majority of our peaches are freestone, the white-flesh varieties being best for eating out of hand and the yellow flesh the best for canning, preserving and drying. Peaches are remarkably early and heavy bearers, ripening quite a few the second year after being put out, and a good crop the third year.

Pears of all varieties do well in the Valley. We have fifteen varieties of them growing on our place. The early pears are not all as good quality as the later ones, though they are very good for the season. The main crop begins with the Bartlett, which commences to ripen the latter part of August, and about the last pears to be picked are the P. Barry, which some allow to stay on the trees until January, but we advise picking them in December, allowing them to ripen after being picked, which gives a much better flavor to all pears. Last year we received from 4 to 6 cents a pound for most of our pears, nearly all of them being of the late varieties. Pears bear enormous crops here. Mrs. Stewart, who lives a short distance west of Mesa, picked over 800 pounds of first-class pears from two trees of the Keiffer variety, and she received either 4 or 5 cents a pound for them. The pear blight, which has ruined so many orchards in the East and elsewhere, has never done any damage in this Valley, probably on account of our climatic conditions.

Plums of all varieties do remarkably well. The local demand is at present good, but shipping will have to be resorted to in the near future and there will no doubt be a good market found for the large Japanese and the Burbank hybrid varieties, which will stand shipping and, on account of the large size, looks and fine eating qualities, command a fancy price. From one to six-year-old plum trees of the Gold variety we picked over 300 pounds of plums, receiving 3½ cents a pound for them. For the large eating plums we received from 5 to 7 cents a pound. We grow about eighteen varieties of plums, nearly all of which ripen in July and August.

Notwithstanding that most people associate good apples with snow and zero weather, the fact is that we raise good apples in the Salt River Valley, where we have neither snow nor zero weather. We have fruited six different varieties here, and they all did so well that we now have out about five acres of the very best varieties of the best eating apples, such as the delicious King David, Jonathan, Stayman Winesap, the White Winner Pearman, Blank Ben, Champion, Wilson June, Summer Champion, Giant Jeniton and Yellow Transparent. From one seven-year-old Yellow Transparent apple tree we picked over 250 pounds of apples, and we received from 6 to 10 cents a pound for them.

Apricots are rapid growing and early and heavy bearers in the Salt River Valley. The second summer in the orchard the trees will fruit considerable, and the third year will yield a paying crop. They are very long lived trees and grow to be an enormous size and make a beautiful shade tree. They yield anywhere from fifty to 300 or 400 pounds to the tree, depending of course on the size and age. The average price of fresh apricots is about 1½ to 2 cents a pound, though the early ones, which come into market about May 10, bring as high as 10 or 15 cents a pound. We have six different varieties which ripen from the middle of May to the middle of July.

The nectarine, which is a smooth peach, it gs norown commercially here, although it sells well on the market and makes an excellent preserve. Its habits, growth, etc., are identical with the peach, though the fruit does not average as large.

Hall Brothers' Pear Orchard, Phœnix, Arizona

Our first crop of cherries is just beginning to set at date of writing this article, May 1, and we expect to have quite a crop of them, this being the first year in bearing. They are the eastern varieties, though we have some young trees of the Pacific Coast seedlings.

The quince is grown a great deal for preserves here, but there is not much of a commercial demand for them. They ripen the latter part of October and the first part of November, and we receive 3 and 4 cents a pound for them. They are very heavy bearers and make a very pretty bush-like tree.

Nowhere in the world are blackberries more profitable or productive than they are in the Salt River Valley. From five rows, 300 feet long, we raised last year over 6,000 boxes of berries, which is at the rate of about 25,000 boxes per acre. On one day we picked 945 boxes from this patch. We received over $500 from the same berry patch last summer. Picking started June 4, and lasted until July 25. We put out about three acres more in blackberries this year and about an acre of raspberries. Dewberries, which are almost identical with the blackberries, except in matter of growth, which is lower and trailing, ripen from two to three weeks earlier than the blackberries. We received from $2 to $2.50 a case of fifteen boxes for most of the dewberries, while the blackberries brought from $1.25 to $1.75 a case. We paid from 2 to 3 cents a box for picking the berries. Last year we sold the first local grown raspberries ever sold or raised in the Salt River Valley. This year we expect to sell a considerable quantity of the red and purple raspberries, and we are increasing our acreage. We received 17½ cents a pint box for the raspberries which we sold last year. The logan berries, which are a cross of the wild blackberries and the red raspberry, succeeds very well here and produces a big crop of large, red berries from an inch to an inch and a half long and of fair flavor. We received 15 cents a pint box for logan berries last year. They should be grown on a trellis, as they are such rampant growers that it is hard to handle them otherwise. Strawberries do fine here and many growers make big money on them. They require considerable care and attention during the summer months, but from March 1, until July 1, they yield big crops of berries, which sell readily at prices ranging from 10 to 25 cents a box.

All the California table and wine grapes do well here. The hot, dry atmosphere produces a very fine quality of grape with high sugar content. The Thompson seedless grape is the chief commercial variety grown here, bringing fancy prices on the eastern markets. A few varieties of the eastern grapes do well. Big returns have been received by the grape growers the past few years in Salt River Valley.

It must not be understood that the prices we receive for fruit now will last many years, but the prices will always be such that good money can be made raising fruit. A great mistake is made by trying to carry on too large an acreage of fruit. We now have out between thirty-five and forty acres of fruit, berries and asparagus, and it is altogether too much to look after to the best advantage. Ten acres in fruit and berries will give one man all he can look after, and will support a family with ease and comfort, and by combining poultry and fruit he can make a good deal more. The shade of the trees is good for the poultry and the poultry is good for the trees.

Asparagus is a very good paying crop. From one and a half acre of asparagus, we sold, last year, $705.65 worth and we will do equally well with it this year. We commenced cutting March 1, and stopped May 1, averaging 15 cents a pound the season through for it.

The sunshine of prosperity brings out the hay-makers and drives to cover the muck-rakers.

The Hall Brothers' Ranch

"What man has done, man may do."

Judge W. H. Stillwell, while passing down Adams street last night, instinctively turned into the *Republican* office, and as he entered the news department he began to quote from First Corinthians as follows: "There is one glory of the sun and another glory of the moon, and another glory of the stars; for one star differeth from another star in glory."

"Quite right," said the religious editor, whereupon the judge turned to the farm editor and continued, in paraphrase: "And here in the Salt River Valley there is one glory of the soils; for one soil differeth from another in glory." "Quite right," said the farm editor, "What's the answer?" Then the judge said he just dropped in to open the safety valve for a minute and let his enthusiasm readjust itself. He took a ride down the Valley Sunday afternoon and passed by the nursery of Hall Brothers. Noting the sign and recalling former invitations to visit the place he decided it was a fine opportunity, especially as it was warm and he wanted a drink of water anyway. And it was what he saw there during a half hour's stay that impressed him so much he did not stop quoting scripture for twenty-four hours, and only inspired writings can fittingly express the marvels of the Salt River Valley, and especially Hall Brothers' nursery.

There is no purpose at this time to describe the nurseries. That has been done before and may be again sometime, but only a general reference was made by Judge Stillwell to illustrate what a wonderful place it is and how little most of the Valley people know about it. Every prospective farmer and horticulturist in this Valley should visit the nursery before he begins business, for a lot of reasons. One is to note the soil for while all soil in this Valley is glorious and good for one thing or another, "one soil differeth from another soil in glory." Hall Brothers seem to have the finest in the world for this particular business; that is for the special production of the greatest number of things they raise. And the variety of fruits grown is quite amazing to those who think the Valley is limited to peaches, pears, apricots and strawberries. At Hall Brothers' place one may find almost every fruit raised in the country between the Sonora and the Canadian lines, in some quantity or of some variety. Some kinds of course are not well adapted to this Valley but they can be grown with the right attention, but there are more kinds that grow here to perfection, than one can find anywhere else. Even cherries, hitherto supposed to be impossible here, were successfully grown this season.

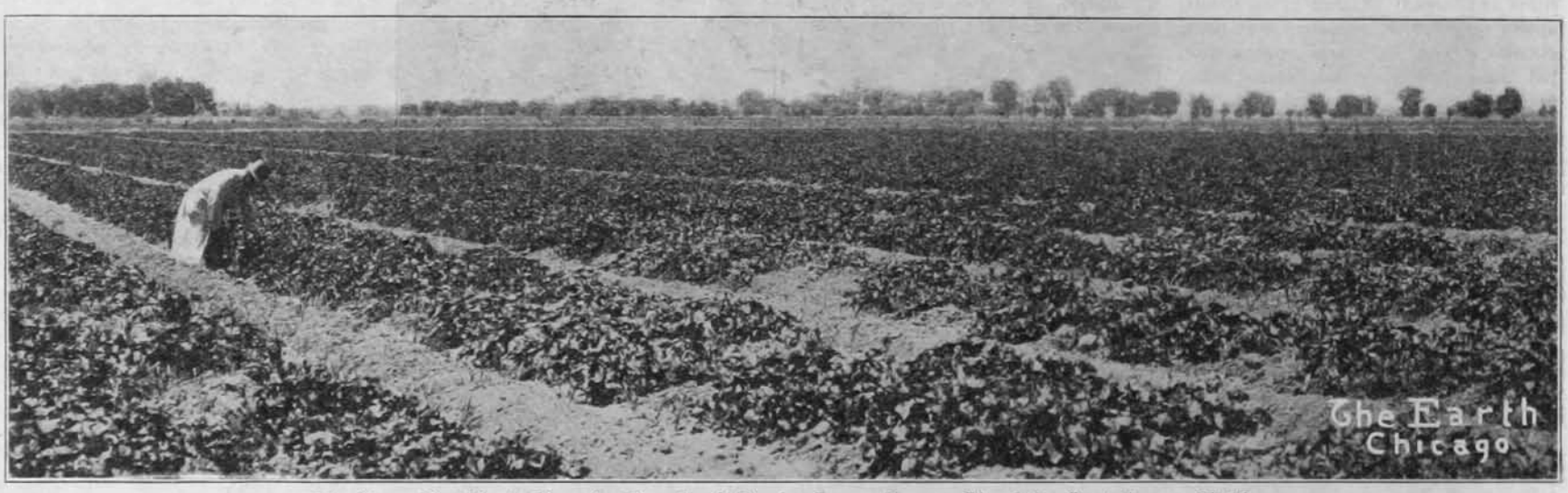
On one vine Mr. Stillwell saw seventeen cantaloupes, by actual count, fighting each other for room to grow in. There are plums of small pit, thick meat and delightful taste; in fact almost any kind of a plum one might name. The pear orchard was a marvel and all the trees are loaded with fruit. Mr. Stillwell says he does not see how the trees can bear the burden of their fruit. He thinks a lot of it will have to be shaken off to make room for the rest. Then there is everything in the line of berries and small fruits—raspberries, blackberries, strawberries, etc., as well as the large asparagus field and other crops too numerous to mention.

Mr. Stillwell was amazed when he was told that the farm had not been irrigated since March 1. That treatment would not do for every Salt River Valley farm, but it works on the Hall place. In the first place it is fine soil for fruits and garden. Then it is only ten or twelve feet to the normal water table below, from which the roots draw their moisture. Another thing is that all sorts of methods are resorted to for conservation of the moisture. The orchard, for instance, is grown up with weeds, not because the Messrs. Hall are shiftless, but because they regard the weeds as great friends in time of need. At the right time of the year when the irrigating is over the weeds are encouraged to grow; they are then mowed down, forming a perfect mulch and that which they draw from the soil goes back into it.

These few remarks by Mr. Stillwell, however, are merely an index to what may be seen and learned there. He is surprised to appreciate that he has lived here himself under the very shadow of the tree of knowledge so long, without having looked it over. He says he has gloried in the orange orchards, the best beet fields, the alfalfa and grain fields and all the other wondrous rights of the Valley, but saw and learned more in his Sunday afternoon ride than he could acquire in a week inspecting the attractions above named.

And the greater lesson of all, says the judge, is that of finding out just what sort of a soil one needs for the particular crop he is going to raise, and then secure that kind of a piece of land, or else change the crop to fit the soil, for "there is the glory of the soils, and one soil differeth from another in glory."—Arizona *Republican.*

One-Half Acre Strawberry Patch—Yield Fifteen Berries to the Box



Dr. Foss, President Phœnix Board of Trade, Inspecting a Glendale Cantaloupe Field

Glendale Cantaloupes

By Dr. John W. Foss

The richest melon land, by analysis, in the world is about Glendale, Arizona, nine miles northwest of Phœnix on the Santa Fe Railway. This land contains .22 per cent phosphoric acid and other chemical ingredients necessary to plant life in relative proportion.

During the season of 1908, the first Cantaloupe Growers Association was formed and consisted of 130 acres. The crop of this 130 acres far exceeded the wildest expectations of the greatest cantaloupe enthusiasts. Fifty-seven carloads of the now famous Glendale cantaloupes were shipped from this acreage. The tonnage per car averages from 600 to 800 pounds more than that of what had hitherto been considered the finest grade of cantaloupes.

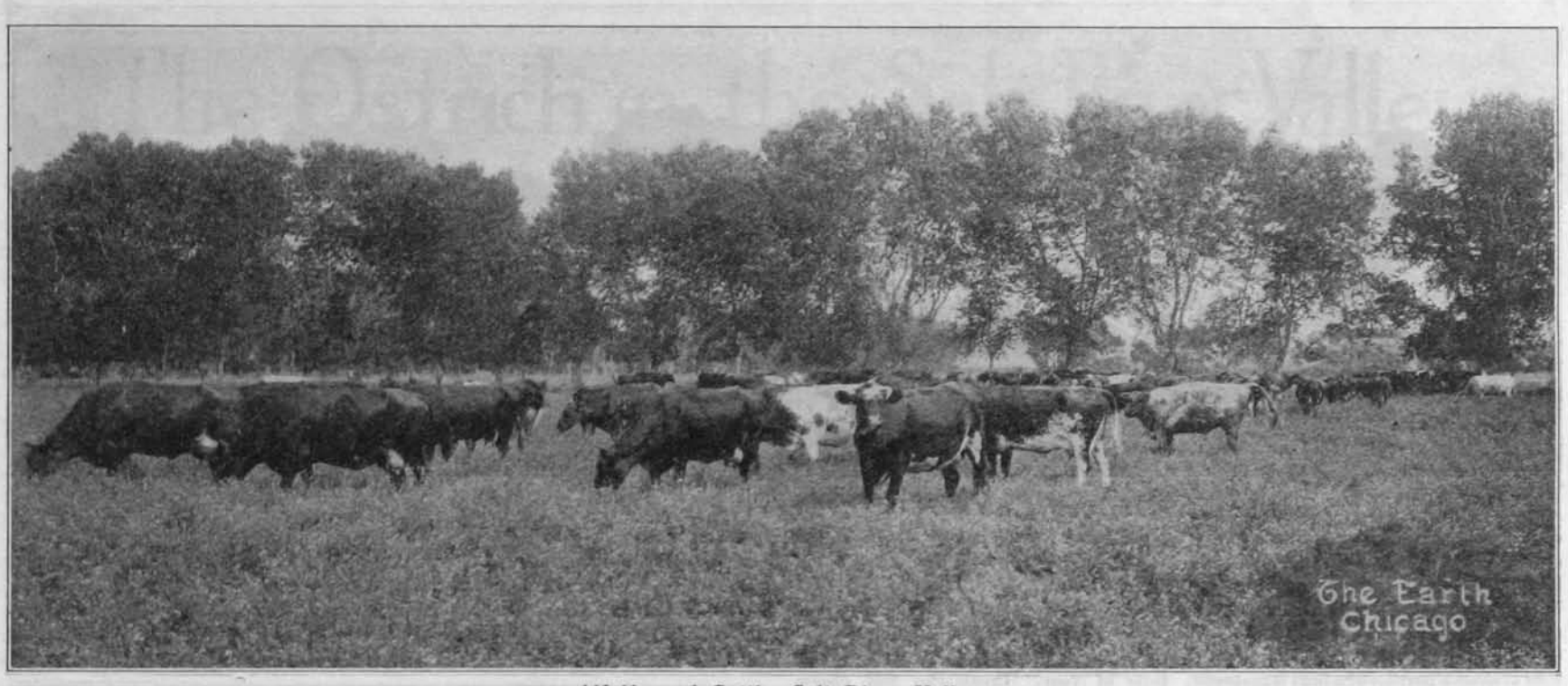
Two young men, the Haversa brothers, shipped from seven and three-fourths acres 1,900 crates, netting them above all expenses about $125 per acre. Another grower, Dan Kinney, shipped from twenty acres 5,600 crates.

All of the growers were new in cantaloupe raising and this was an experimental year, nevertheless the Glendale Cantaloupe Growers Association sold their entire product, netting 19 cents more per crate than the next highest cantaloupe association in the United States, the celebrated Rocky Ford Association.

This year, the season of 1909, 400 acres are in the association, and of this acreage, 380 acres have a 100 per cent stand. The outlook at this writing is for one of the finest crops of cantaloupes that has ever been raised on similar acreage.

E. E. Cadwallader, agriculturist for Crutchfield and Woolfolk of Pittsburg, who are the distributors for the Glendale Cantaloupe Growers Association, says that in his fourteen years' experience with cantaloupe growing he never has seen anything that equals the fields of the Glendale Association for this season.

[The Glendale cantaloupes are now being shipped and the distributors who are handling them say that they are the finest they have ever handled. As many as seven carloads a day are moving from Glendale and probably nearly as many from Mesa. Editor's Note.]



Alfalfa and Cattle, Salt River Valley

Cattle Industry *in the* Salt River Valley

By Dr. J. C. Norton

Dr. Norton is territorial veterinarian of Arizona, therefore, what he has to say to readers of THE EARTH on the subject of cattle raising in the Salt River Valley bears the stamp of knowledge and authority.

I spent the first twenty-five years of my life on my father's Iowa stock farm, assisting in caring for cattle, as my father made a business of breeding thoroughbred shorthorn cattle and feeding large numbers of steers for the market. There an up-to-date stock farm was provided with large bank barns with a capacity for a hundred head or more of stock, 200 tons of hay, corn cribs, hay sheds, beet cellars, cattle sheds, evergreen and lumber wind-breaks and water troughs, containing stoves for heating the water so that stock could drink it without being chilled for hours. There we even tried to enjoy loading and hauling corn-fodder in the winter time, when the snow would trickle down our necks. In fact, we spent most of six months in the year raising and storing stock feed, and the other six months in feeding it. Even under these conditions some profit was made and we thought that we were well fixed; but circumstances brought me to Arizona.

Imagine my surprise when, on a January morning in 1892, I landed in the Salt River Valley and drove out and saw large numbers of fat cattle, ready for the market, grazing on green alfalfa, knee high, which had been their only feed, provided with clean, warm water in open tanks, and learned that they had never seen even the outside of a barn or shed. The change was appreciated and I was in love with the country at once and have remained ever since and enjoyed seeing cattle grow and fatten under these natural conditions where, practically, nothing is expended for shelter and special feeding.

NATURAL CONDITIONS FAVORABLE.

Cattle, like all animal life and man, must be fed for three purposes, namely, to make up for the wear of the body, to keep up animal heat, and for growth. In this Valley, where we have very little freezing weather, little is required to keep up the animal heat and therefore fully two-thirds of all the food consumed is devoted to growth. As a result, nearly all kinds of stock mature early and develop into large animals of their class.

THOROUGHBRED CATTLE.

For twenty-five years or more the cattle of this Valley, as well as of the ranges of the Territory, have been improved by the importation of thoroughbred bulls of various kinds, with the result that the feeders brought into the Valley are now as good as those furnished from any western range. There are now in the Valley many fair-sized herds of thoroughbred cattle of all the principal beef breeds. Though these herds are supplying a good portion of the bulls for the ranges of the Territory, they cannot begin to meet the demand. Many shipments of bulls are also made from here to points in Old Mexico and Texas. The breeders receive from $50 to $100 per head for their thoroughbred bulls that go to the ranges, and more for those to head thoroughbred herds. Though these prices are not as high as received at times in some of the eastern states, the profit is much more, because of the much less expense incurred for feeding and handling. This stock always runs loose and is never sheltered and receives only alfalfa grass, except at times in the winter, when they may also be allowed to run to stacked hay. Cattle are sometimes kept up on hay while land is being irrigated.

FATTENING CATTLE.

The Valley raised cattle that are fattened for the market usually are sold when two years old, at which time they will average over one thousand pounds and bring from $4 to $4.50 per hundred. By far the larger number of cattle fed in the Valley are range steers, which are brought in when two or three years old, and aged cows. This stock is now fattened at all seasons of the year, principally by grazing on alfalfa. During the colder months many grain fields are browsed off, in order to prevent the grain from growing too rank. This feed is very fattening and comes at a time when alfalfa grows slowly. A combination of hay and grass brings good results. In many instances, valley farmers own ranges in the mountains, from which they draw cattle for finishing on alfalfa, but the majority buy stock cattle from the ranges.

A Glendale Cantaloupe, Salt River Valley

THE AVERAGE PROFITS IN FEEDING.

Two-year-old range steers cost from $17 to $20 per head and three-year-old steers $20 to $24 per head. These cattle are fattened in from six to ten months, nine months is a liberal average. Fat cattle sell at from $4 to $4.50 per hundred pounds and such cattle will weigh from 900 to 1,200 pounds. Calling the average weight when sold as 1,000 pounds, they would bring $40 to $45 per head and the average cost $20 to $24 per head, the profit for feeding would be from $19 to $24 per head. Where the farmer buys the range cattle for fattening, the $19 to $24, less the interest on the investment, would be his pay for feeding.

In many states, two acres are allowed to provide feed for one steer, but on good alfalfa, with ample water supply, two steers can be fattened on one acre during the year, but three animals on two acres is conservative. This would bring a gross income of $30 to $40 per acre. When the feeder buys grazing for his cattle, he must pay an average of $1 per head per month for six months and $2 per head per month during the balance of the year. The nine months required for feeding will cost on an average from $10 to $12, which would leave him a profit of from $9 to $12 per head.

IMPROVED METHODS.

Though cattle fattening under present plans is profitable, yet many think that improved methods can and will be introduced that will bring larger returns in feeding and at the same time increase the productiveness of the soil. The present plan of allowing cattle to graze in alfalfa fields most of the year is extravagant. They destroy much feed, tramp out the stand of alfalfa, and are the means of spreading weed seed promiscuously, all of which decrease the value of the crop. By arranging to feed cattle, at least most

Sheep in Pasture, Salt River Valley

of the year, in paddocks, hay just as it is cut and cured from day to day and stacking the balance for later feeding or selling, much more feed can be produced. This is especially true in an irrigated country, because, as soon as a crop on a certain field or even a portion of a field is matured, it is cut and fed or stacked and the land is at once irrigated for another growing crop. At least one additional cutting can be raised during the year under this plan of feeding. Cutting alfalfa regularly tends to destroy all of the foulness in the land and to increase the stand, and therefore the yield. It will pay still better to prepare to cut up the alfalfa hay with a machine and feed it in troughs, so that the waste will be reduced still more. The expense for the additional labor will be much more than repaid by the increased values obtained from feeding in this manner. Much expense for labor in cleaning and repairing ditches will be saved where cattle are fed in paddocks instead of allowing them to graze. Grain hay could be cut and mixed with the alfalfa hay for variety and even a small allowance of cotton seed meal, or other concentrated food, could be fed with cut or ground alfalfa in order to make a balanced ration for topping off cattle.

As the sugar-beet industry is now firmly established in the Valley, beet pulp and crude oil syrup will also be used in feeding large numbers of cattle. Beet tops have been fed to cattle with good results.

OUR MARKET.

Though the larger portion of the fat cattle in the Valley are marketed in Los Angeles, California, we have a steady local demand for beef from all the cities of the Territory. During each spring many buyers come here from Denver, Kansas City and other Eastern points and take out large shipments and this market is increasing.

DAIRYING.

The dairy farmer, with reasonable capital and push cannot help making money in the Salt River Valley. Of course, the amount of milk products depends upon the kind and grade of cattle used, but conditions are favorable for the production of milk. Alfalfa grass and hay seem to supply the demands of the milch cow during the entire year and will produce a liberal supply of rich milk. Though some shelter would be of assistance a few days in the year, thus far practically no dairy barns have been built in the Valley.

Many dairymen retail milk in the cities and towns of the Valley, where they receive from 5 to 7½ cents a quart and 20 to 25 cents a gallon. A good cow will produce from three to five gallons a day for from seven to eight months in the year. It will readily be seen that at these prices the returns from a cow would be from 50 cents to $1 or more a day, where milk is retailed. Other dairymen make butter which sells at from 25 cents to 45 cents per pound, according to the time of year. Creameries and cheese factories are located in many portions of the Valley and these consume the product of many dairy herds. There is a large milk canning factory located near Tempe on the south side of the Salt River. Separating stations are built in parts of the Valley, in order to make it convenient for farmers to deliver their milk.

Certainly, good prices for products, reasonable prices for feed, and no expense for shelter, ought to be a change that would interest the dairy farmer who has been selling his dairy products for less money, feeding corn and high-priced grain, and housing his cows for half of the year in expensive barns. Of course, there is labor in dairying anywhere, but it is much less in a country like this than in colder climates.

There is a great demand here for many more progressive dairymen, as butter and other dairy products are being shipped to all parts of the Territory regularly by the car load from the States. We have many enterprising dairymen, who are making a great success financially, but there is room for scores more. There are several small herds of thoroughbred dairy cattle in the Valley that compare favorably with those of eastern states.

The dairy cows of the Valley are practically free from tuberculosis and they are handled in the open air during the entire year in such a way that the disease could spread but little, if present; in fact, the hot, dry air is destructive to tubercular bacilli. Parties shipping dairy cows into the Territory should see that they are accompanied by tuberculin test certificates, in order to prevent delays en route, as the rules of the Livestock Sanitary Board of Arizona are very stringent regarding the admission of all classes of livestock.

SANITARY CONDITIONS.

Many of the southern states have been greatly handicapped in improving their stock, because of the presence of Texas fever infection, which causes severe losses, especially among imported stock. Though the Salt River Valley is in the South, with a mild climate, and is surrounded with open ranges, our cattle are free from Texas fever, cattle scabbies and all contagious diseases controlled by quarantines. There are no losses of either native or imported cattle from contagion; in fact, no cattle have been quarantined for any reason during the past eight years in the Salt River Valley. Our good feed conditions are favorable to the early maturity of calves, which favors the development of blackleg; but the losses from this cause are now reduced to a minimum by regularly vaccinating all young stock. Cattle can be shipped from the Salt River Valley to any part of the country without government inspection, as there is no government quarantine restrictions affecting the movement of cattle from any part of the Territory.

The Apiary Industry

By William Lossing

Mr. Lossing's achievements, in various sections of the United States, in the apiary industry stamps his statements with the authority of experience.

I have had considerable experience in the production of honey in the cold North, as well as eleven years' experience in the Salt River Valley of Arizona. My business has been on a much larger scale than in the East, where I sold in small lots. I ship by the carload lot from here. I started here in the bee business eleven years ago, with 100 colonies, which I have been adding to, from year to year, till they now exceed 1,500 colonies scattered some twenty-seven miles distant from the two extreme apiaries. I have at present ten apiaries, the largest having 250 colonies.

I practice migratory bee keeping by hauling to the desert for mesquite and cat-claw honey, which has no superior for quality. When the flow from the desert flowers is over, the bees are hauled on platform spring wagons to the purple fields of alfalfa, where the little workers renew their activity. This alfalfa honey is a light amber and is very heavy and eagerly sought for its retaining qualities, while being brought to a high temperature at the bakeries and factories.

It might be of interest to state that as high as thirty-three cars have been shipped out of this Valley in one season and this, too, before the diversion dam or the great reservoir dam were contemplated. The shipments will be easily doubled under the new system. To me it looks like the dawn of a new era for agriculture in the Salt River Valley. Methinks I hear the prospective homeseeker say: "Well, how can I get some bees and a location there?" The best way I know of is to buy an apiary with a favorable location. There is always someone going out of the business, and others embarking in agriculture. Usually in the fall and winter bees can be purchased at $5 per colony for eight frame, two-story Langstroth hives, and $6 per colony for ten frame, two-story Langstroth hives; new standard hive, from $3 to $4.50 per colony. Freight rates at present are $1 per 100 on extracted honey. Prices on honey vary from 4½ cents to 6½ cents per pound f. o. b. Phoenix. Comb honey produced from mesquite bloom brings 18 cents to 25 cents per pound retail. At this date Maricopa County contains 14,000 colonies of bees which, with fixtures included, represents close to $100,000. In normal condition the above number of colonies would contain close to 600,000,000 bees, and give employment to 100 apiarists. The writer sees no good reason why the farmer should not keep bees, at least enough to produce his own honey. When that is done Salt River Valley will surely flow with milk and honey. The production of beeswax ranges from 2 cents to 2½ cents per pound, per case approximately 15,000 pounds, which sells at 25 cents per pound, or a total of $3,750. The beeswax produced here is of very high quality, and bright yellow.

Two Happy Wives.

"I am told that your husband plays billiards every night at the clubs—plays for money, too," said the anxious mother to her newly married daughter.

"That's all right, mother," cheerfully responded the young wife. "He gives me all his winnings—"

"What? Do you—"

"And he always plays with Mr. Nextdoor."

"What difference can that make?"

"Mrs. Nextdoor makes her husband give her his winnings, too, and then she gives the money to me, and I hand her what my husband won from hers, and so we both have about twice as much money as we could get out of them otherwise."

—*Exchange.*

The only way to get a hen out of a garden is to go slow, but shoo'er.

If a man is crazy and doesn't know it, it is because he has no wife to tell him.

Its unsafe to trust an important matter to a man who has nothing else to do.

He who trusts to luck is mighty lucky if he doesn't make a miserable failure of life.

"While we are deliberating on the time when we are to begin, the time for action is lost."

The Ostrich in the Salt River Valley

By L. H. Chalmers

An interesting article on one of the great sources of wealth in the Salt River Valley of Arizona.

The native habitat of the ostrich covers the whole of Africa and southern Asia. There are three kinds of ostriches; first, the Nubian, or red ostrich; second, the South African, or gray ostrich; and third, the Mid-African ostrich, whose flesh is blue. The name is acquired from the predominance of that portion of the skin of the bird that has no feather covering.

The feathers of the bird have been used as an ornament since earliest antiquity. They were used by the Egyptian kings, long before the building of the pyramids. In fact, philosophers believe that the first primitive ideas of dress originated in a man's sticking an ostrich feather in his hair to attract one of the female sex.

A Salt River Valley Ostrich Farm

From the earliest times the feathers were obtained from wild ostriches by hunters either snaring or digging pitfalls to catch them. After capture, the feathers were either pulled out or the birds were skinned and robes made of the skins. This mode of obtaining feathers, as before stated, continued from the earliest times down to within the last thirty-five or forty years. In the early '60s, a few ostriches were tamed and domesticated in South Africa. It did not take long to convince the English that a new industry had sprung up in the world that was destined to add greatly to the world's wealth, and by the early '80s there were 20,000 or 30,000 ostriches in captivity, and the government of Cape Colony was thoroughly awake to the situation and had passed laws providing for an export duty, this to prevent birds being shipped out, and farms being started elsewhere.

By 1900, ostriches in captivity had increased in Cape Colony until it was estimated that there was from 350,000 to 400,000 domesticated ostriches, and by this time the government and people of Cape Colony were so cognizant of the vast profits and so desirous of keeping the profits to themselves, that a law was passed absolutely prohibiting the exportation from the colony of either the bird or the egg. I understand all of the South African English colonial possessions have followed suit and to-day it is a criminal offense to ship an ostrich out of any portion of South Africa controlled by the British government.

The raising of ostriches in the United States has been carried on in a desultory way for the last ten to fifteen years, small farms being located in Florida, North Carolina and Southern California. But these birds have been principally held for show purposes and not with the idea of extensive propagation and the production of feathers by the wholesale for the market.

Some twelve or fourteen years ago one Josiah Harbert, a resident of the Salt River Valley, procured a fine pair of ostriches, which are in a sense the basis of the large farms now in this Valley, although the strains have been improved from time to time with fine birds brought to this country for exhibition purposes from both southern and northern Africa, but it is only within the last five or six years that the ostrich business in the Salt River Valley has fallen in the hands of men who are inclined to push it as a business and during this latter period, progress has been very rapid, until at the present time the Pan-American Ostrich Company alone has upon its ranches 2,000 birds and incubator room sufficient to take care of 1,500 eggs at a time.

That the bird will thrive in this Valley has been amply demonstrated. The climatic conditions are practically the same as in southern Africa, with the advantage in favor of the Valley of vast fields of alfalfa upon which the birds wax fat and grow their finest plumage. The day is not far distant when every farmer in the Valley will not be content without having on his farm a few fine pairs of these birds.

That the business is profitable may be seen from a comparison between an ostrich and a steer. At the age of three years a steer is worth from $35 to $45, and will probably net his owner $10 over the cost of his keep up to the date of his sale. At the age of three years an ordinary ostrich, in the Salt River Valley, is considered worth about from $200 to $250. Every eight months you pluck from him feathers to the value of from $35 to $100 and have your bird left. At this age he is consuming from, say, six to eight pounds of alfalfa per day, while the steer at the age of three years is consuming from forty to sixty pounds per day. It is therefore easy to understand why ostrich raising is becoming very popular with us. There are not many birds for sale in the Valley for the reason that when a farmer appreciates the enormous value of the bird, it is hard to induce him to sell it, and he is not under compulsion to sell on account of age, as the bird lives from seventy-five to eighty years and is in fine plumage until he is fifty or sixty years of age.

There are many practical questions which it is impossible to answer in an article of this character, but which will be cheerfully answered by any of the gentlemen engaged in the business if the reader desires to write them at Phœnix, Arizona. Their names will be at the close of this article. However, a few facts might be given:

A young bird of six months of age is considered worth $150; a two-year-old bird, $200 to $250; a three-year-old, if of good stock, $300 to $350. Of course, there are ostriches and ostriches; those producing the finest feathers have practically no price, as farmers will not part with them, and fine breeders, meaning good-feather birds that reproduce in kinds, are worth anything from $1,000 to $5,000 per pair. The average bird, however, produces from $35 to $50 worth of feathers in every period of eight and a half to nine months.

Some idea might be had of the profits which may be made from the birds by a quotation from an article written sometime ago by Edwin M. Barbour of New York. This quotation is given rather than an interview with men who are now actively engaged in the business, as Mr. Barbour is a gentleman who in the main was looking into the business for pleasure and recreation rather than profit, but who was interested sufficiently in the business to go to the bottom of it. Mr. Barbour says:

Let us start with eighty acres of land, half of which is in alfalfa, the ideal food for ostriches, obtainable in the Valley. The subjects of acreage, fencing, feeding, help, etc., for the sake of brevity and clear understanding should properly be treated under other headings. But we must have land to begin with, and as we are going to consider the proposition during a period of five years, it may be as well to mention right here that the eighty acres will have to be doubled long before that time expires.

Upon twenty acres of this alfalfa we will build twenty pens for ten pairs of breeders —ten pairs make an excellent beginning— each pair having two pens of an acre each. Here they are alternated, allowing the alfalfa in one pen to grow while they eat down the other, at an annual cost of from $4 to $6 per head.

The advisability of plucking breeders is an open question. Their feathers are not as good as from those birds having no family ties, whose limited instincts are troubled with nothing greater than a life of ease on large fields of clean and tender green. It is also claimed by some that taking the feathers from "housekeepers" destroys their ambition for raising large families. Be all this as it may, most farmers pluck their breeders and the "unlucky thirteen" pairs that made the enormous contribution of 218 chicks

(*Continued on page 23.*)

Giving a Helping Hand

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The columns of THE EARTH are devoted to a discussion of the interests, features, climate, life, and present opportunities of that great region hitherto but little understood, that has come to be known as THE GREAT SOUTHWEST. They will be found to be of intense interest to every man who feels an inclination to do for himself in a country offering an almost infinite variety, and that represents almost all there is left of the vast domain that has grown from the wilderness into opulence.

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F. L. VANDEGRIFT, Managing Editor. MRS. MARJORIE L. RUSSELL, Editor.

CHICAGO, AUGUST, 1909

In the Santa Fe Southwest

THE SALT RIVER VALLEY OF ARIZONA, to which this number of THE EARTH is devoted, is a remarkable example of reclaiming a desert and subjecting it to the uses of agriculture by the introduction of artificial irrigation. In its natural state, much of this Valley is bare of grass, rooted only with mesquite, greasewood, and other desert trees, and the varied species of the cactus. It was so desolate and forbidding of aspect, that the Spaniards, who, ordinarily, stopped in their explorations of southwestern America to establish settlements, contemptuously passed it over, despising the attempts of the Indians to cultivate it. And so it slept for centuries, barring the little cultivation by the natives, until, following the Mexican War, American settlers took over and conquered it.

Reclaiming and settling this soil, so far from the markets of the world, has required patience, courage, and intelligence, but the American pioneers always have been equal to the task of making homes on the frontier and conquering the most obstinate soil; and so, the pioneers of Arizona have reclaimed the desert Valley of Salt River, and converted it into gardens, meadows, orchards, fields, and even forests, where all of the products of the north temperate zone may be grown. Originally a desert plain, it has become a smiling land, where grow the orange, the lemon, the fig, the date, the olive, and the pomegranate of the sub-tropics, and all of the cereals, grasses, and deciduous fruits of the North.

This production has made splendid cities in the Valley, and established enterprising and cultured communities so firmly, that the United States Government has taken over private enterprises of irrigation, and in their place is about completing a great project, which will irrigate and for all time reclaim every foot of valley and mesa drained by Salt River, west of the mountains in which lies the source of water. Ultimately, this project is to be restored to the ownership and control of the water users, but for the present it is Government's, and will be administered and maintained by Government for ten years or more to come. This insures improvement and enlargement to the utmost limit by yearly experience, and so, when the water users take it again, it will be perfect and complete, enduring for all time.

However, the example was set and the battle won first by individual effort, and afterward by corporate capital. The pioneers, of course, could not expect to do with their little means what Government has done with $8,000,000; but they pointed the way, and the example was set when they conserved sufficient water to reclaim a portion of the Valley; making it certain that Government, undertaking the project, was sure of getting its money back.

The project, besides irrigating the Valley lands by gravity, first will use the power at the dam, to generate electricity for pumping water upon the remote mesa lands; for driving electric railways and other machinery, and for illuminating the cities and homes of the Valley. This duty done, the water will hurry from the turbines into the river again, and, flowing out of the canyon, will be diverted by barrages into canals, and given to the thirsty soil. Few other reclamation projects undertaken by Government will cost so much as the Salt River project, and not one will accomplish so much.

The area of possible reclamation by this project is something like 250,000 acres. Much of this area already is given water by the canals of the original private corporation, supplemented by a barrage already completed by Government. This portion has been farmed so long, that the landscape presents the aspect of the meadows and fields and orchards and groves of Illinois, only the farms are very much smaller, and the green a deeper green in Salt River Valley; the whole glorified by gardens of perennial flowers, in the midst of which sit splendid homes. The landscape fast is assuming the aspect of Riverside and Redlands in Southern California, and the intensively cultivated districts of San Joaquin Valley.

The Valley is advertised the most widely by the superiority of its oranges and their early arrival in the New York market, but its more dependable product, the crop of greatest profit, is alfalfa. Of this grass, there are many thousand acres in the Valley, annually yielding ten tons per acre, worth, if baled for shipment, $12 per ton. The meadows also are pastured, and by it in three months beet cattle are ready for the butcher. However, it is in connection with the dairy that alfalfa makes the greatest profit for the farmer. Yearly, this industry is growing, but still the production of butter is not great enough to supply the local demand. Ten dollars monthly per cow is about the size of it on the alfalfa pastures of the Valley.

Annually, in winter, 600,000 head of sheep are driven to the warm altitudes surrounding Phœnix, for lambing and shearing. Many herds also are fed through the year in the Valley. Nearly one thousand acres of oranges have been planted in the Valley, and they produce a profit of $300 to $400 per acre at five years of age, and mature trees double that sum. The fruit ripens early enough to reach the New York market by Thanksgiving Day, and it sells readily for from $6 to $8.50 per box. Along with oranges, grow grape fruit and lemons. Other valuable products of the soil are grapes, figs, olives, apples, peaches, pears, plums, prunes, nectarines, corn, kaffir, milo-maize, sorghum, small grain, beans, melons, garden vegetables, and sugar-beets. The last named contain the highest possible percentage of saccharine, and the season is so long that a local sugar-beet mill, lately taken over by the United States Sugar and Land Company of Colorado and Kansas, runs ten months of the year. The honey bee and the helpful hen also are busy in the Valley, and not far from Phœnix is the largest ostrich farm in the world.

Phœnix, the capital of the Territory and the Queen City of Salt River Valley, is a splendid town of 18,000 or 20,000 inhabitants. Here is more intellectual culture to the city block than in any other community of its size in the Mountain West. This is the testimony of all intellectual men and women who visit the Valley. Members of Congress, who visited the city while statehood was under discussion, were greatly impressed by this culture. It is impossible to escape it, if one will go with a receptive mind. The stranger finds it in the professions, in commerce, in the church, in the architecture, in the home, in the good roads, in the dooryards. Everywhere, its gentle influence is felt.

The city possesses all of the accessories of modern civilization: Waterworks, sewers, gas, electric lights, street railways, steam railways, telegraph, telephones, well paved streets, public library, theatres, a country club, daily newspapers, board of trade, commercial club, Y. M. C. A., fraternal societies, women's culture clubs, many churches, and a system of high school and ward schools unsurpassed anywhere. The main highway of travel is the Santa Fe Railway, connecting with the main line, east and west, at Ash Fork. Another Santa Fe line is building westward, to a connection with the main line at Bengal, in California. This line already has been completed to the Colorado River, sixty miles south of Needles. The climate is warm in summer, but the dry atmosphere makes it bearable. In winter it is delightful, and many make it their homes from early November until late spring. Other splendid little cities, where American thrift, enterprise, and culture abide, are Mesa, Tempe, and Glendale.

Salt River Valley, besides producing sufficient foodstuffs for local consumption feeds the rest of Arizona. It is the granary and garden of the Territory. There are other valleys in Arizona and they help, but without Salt River Valley the Territory would have to ship in the most of its supply of food. Even now, foodstuffs are shipped in, but Salt River Valley contributes a great quantity to the demand. This demand yearly is increasing with the growth and development of the Territory. Arizona especially is developing its mineral resources. Steadily it has been growing in the production of copper, and for the past two or three years it has led all other copper states of the Union. It also is increasing its production of gold, silver, and other ores, and its mountain pastures yearly are adding new herds of cattle and sheep.

A study of the latest report of the governor of the Territory is interesting. The Territory is 378 miles long and 339 miles wide, containing 128,142 square miles, or 82,010,880 acres. The population is estimated to be 200,000 of which 69 per cent are Americans, 13 per cent native born Mexicans, 11 per cent Indians, and 7 per cent foreign. The illiterates are 1 per cent of the whole.

The Territory has a university, which includes colleges of mines and agriculture and a military institute; and two normal schools, an asylum for insane, an industrial school and reformatory, a penitentiary, and a state capitol. The last named was built without a dollar of graft or boodle, and it sits in the most beautiful capitol square in the United States. These public edifices have cost $1,196,000.

The total assessed valuation of the Territory is $80,637,541 and the real value $450,000,000. There are thirty-two territorial and thirteen national banks, whose aggregate capital and surplus is $3,555,781.64; deposits $13,849,214.64; and loans and discounts $9,358,648.

The bonded indebtedness of the Territory, June 30, 1908, was $3,113,275. This includes the obligations of the several counties, which have been assumed by the Territory; the counties reimbursing the Territory for interest paid.

There are 1,900 miles of railway in the Territory, an increase of 500 miles since 1905. Besides the Salt River Valley project, the United States Government has completed a reclamation project at Yuma, which includes lands on both sides of the Colorado River (Arizona and California). This cost $5,630,000.

The governor's report was submitted to the Secretary of the Interior, September 1, 1908, and its latest information is of the year 1907, and before. The year 1908 will not be reported until September, 1909. However the figures submitted in the governor's report for 1907 are gratifying. For instance, an abstract of the copper returns to the territorial auditor is worth while. In 1906, the production was $49,141,243, and in 1907, $50,667,051. In 1906, the quantity of production was 255,012,155 pounds, and in 1907, 252,784,698 pounds. These figures are the returns upon which to base taxes and are more apt to be under than over the actual production. The production of gold in 1906, was 125,015 ounces, and in 1907, 118,373 ounces. The production of silver in 1906, was 2,706,044 ounces, and in 1907, 2,423,723 ounces. The population in 1906 was 185,000, and in 1907, 200,000. The territorial tax is 75 cents of each $100 of assessment, the same as the year before. County taxes are decreasing. Fifty-eight fire, twenty-one life, and fifteen miscellaneous, insurance companies were doing business in the Territory in 1907. The premiums collected were $1,439,905.16. In 1906, the premiums were $1,249,438.97. The school population (6 to 21 years) in 1906, was 33,169; in 1907, 34,299. School districts in 1906, numbered 293; in 1907, 301. School property in 1906. was valued at $1,158,335; in 1907, $1,409,788.

THE CASTLE HOT SPRINGS, famous the world over for health and rest, lie in the mountains of Arizona, between Prescott and Phœnix. Their altitude is 2,000 feet above sea level, westward of the Great Continental Divide. Secluded in the mountains, they are within two hours by automobile from the Santa Fe, Prescott and Phœnix Railway. This line connects, east and west, with the main line of the Santa Fe Railway at Ash Fork, and the journey, all the way, from the Atlantic or the Pacific, is made by Pullman cars.

The scenic highway from Hot Springs Junction, finely graded and perfectly maintained, lies through the heart of picturesque mountains. It is a region of sunshine, and this and the dry atmosphere make it one of the most attractive health resorts in the world. Really, it is summer all the time, without the humid atmosphere and prostrating heat of the summers of other climes. It is a mountain region, but within its little vales are grown the orange, the lemon, the fig, the olive, the pepper, and the palm, and the flowering plants of the tropics. A hotel garden is maintained throughout the year. The springs flow 400,000 gallons every twenty-four hours. The waters are mineral and curative, but very palatable, and much sought by visitors. Their temperature is from 115 to 122 degrees, and, besides private baths, the hotel company has provided many pools where bathing in the open may be enjoyed.

The hotel comprises three buildings, luxuriously furnished and equipped for guests, and adjacent are cottages which may be rented. Into these quarters the water is piped directly from the springs. The hotel has electric light, ice and cold-storage plants, which, added to an excellent kitchen service, make the resort equal in its comforts to any in the world. The dining room, facing Palm Court, is very attractive. All of the outdoor sports are provided. The hotel and cottages are open to all the world, except patients afflicted with tuberculosis. A government postoffice is on the ground, and mail comes daily. There also are long distance telephone and telegraph services. The rates are $3.50 per day, or $90 per month, and upward, American plan.

THE GIANT CACTUS is a curious form of vegetable life, to be found only in the desert plains of southern Arizona and eastward so far as the Rio Grande. Other varieties of this family also are peculiar only to this soil, but the *cereus giganteus*, by its fluted and symmetrical columns, its towering height, and sentinel-like solitude, possesses the most attractive interest. The floor of the plain produces a hundred varieties of the cactus family, and above them towers the Giant, sometimes attaining heights of sixty feet, even climbing low foothills. It stands remotely isolated, or in groves, but always it presents an aspect of gloomy solitude.

It perfectly is round, and, from above the middle, branches of parent size spring a few inches, and then turn upward, as the elbow joint of a stovepipe. The surface is of a pale green color, covered with thorns. It is without leaves. The wood is pithy, collecting moisture, which legend says is Nature's provision of water for the birds of the desert. Legend says also that birds bore holes in the tops and make their nests therein, the thorns which cover the surface below forming a barrier against invasion by rattlesnakes.

The western border of this plant is Colorado River. Opposite Ehrenberg, 120 miles north of Yuma, a few of the trees line the hillsides on the California side, but south of there, on that side, the Giant is so scattered as not to count. On the Arizona side, the plain and hills are thick with the trees. Why the plant halts at this river so abruptly, in its westward march, is for the science of botany to tell. The first historical record of the plant was in the journals of Onate, in 1604, but no doubt it was observed by Coronado and his troopers, when they crossed the desert in 1540, although no mention of it was made in the official reports of that famous march. The first record of the Giant in American history was by an army lieutenant, in 1846, crossing the country, in a military reconnoissance, from Fort Leavenworth to San Diego. The lieutenant sent specimens to his superior officer, and Dr. Engleman of the army, a botanist of some note, named the plant *cereus giganteus*. It is grown for ornament in public and private parks of the Southwest, notably in the capitol square at Phœnix.

ARIZONA IS GROWING IN ALL QUARTERS. The irrigable valleys, as the Salt River Valley, are making the greater gains of population and wealth, but new growth is coming to the mining districts, cattle ranges, and forest areas, as well. For instance, Tombstone, the capital of an ore district, is assessed at three million dollars this year. This is very much in excess of last year's assessment, and it means an actual value of about fifteen millions. Other mining districts are gaining wealth equally well, and all are supplied with food mostly from the Salt River Valley.

PETROLEUM HAS BEEN FOUND IN ARIZONA. It lies about twenty-two miles northeast of Agua Caliente, and prospectors, returning to Phœnix, say that all the signs point to a large deposit and that many men are taking claims over a wide area. The strike was made at 160 feet by a prospector who was sinking on a silver lead. At this depth, the gas became so strong that he was forced to abandon work, temporarily.

THE RAINY SEASON, IN SOUTHERN ARIZONA, opened somewhat earlier than usual this summer. There always is much moisture in mountainous Arizona in this season, but this summer it, unusually, has been abundant. It, especially, is welcomed by cattlemen, who have their herds in the mountains and higher ranges. The grass everywhere is vigorous, and it is expected that more cattle will be pastured in the mountains than ever before.

CHIEF JUSTICE KENT, of the Arizona Supreme Court, is a son of Governor Kent, for whom Maine "went hell bent" two generations ago. The widow of the old governor survives and makes her home with her son in Phœnix.

THE SALT RIVER VALLEY OF ARIZONA, this year, got into the New York market with its first carload of cantaloupes June 27. Picking began at the rate of 100 crates daily.

THE OSTRICH IN THE SALT RIVER VALLEY

(*Continued from page 21.*)

got plucked for their pains, so we will pluck the beginners of our new farm. Remembering that the plumage is slightly damaged through family cares, we will agree to sell the pluckings at an average of $16 each. Bear it in mind that we get a crop every eight months from all matured birds, or in other words one and one-half pluckings per year. This places our breeders' output of feathers at an annual average of $24, which is certainly as low as the most conservative could wish. We will call our breeders "Class A" and as the chicks appear each year, we will add them to the list as "Class B," "Class C," etc. Also remember that when each class of chicks reaches maturity, they take their places as full-grade feather birds, with an average value of $20 per crop, or $30 per year. So here we go for five years, agreeing to accept ten chicks from each pair every year and not grumble:

FIRST YEAR.

Class A, 20 breeders at $24 per annum		$ 480
Class B, 100 new chicks plucked at 6 months at $8		800
Feather income first year		$1,280
Class B, value at 6 months at $100		$10,000

SECOND YEAR.

Class A, 20 breeders, as before		$ 480
Class B, 100, 1 plucking at 6 months $15; ½ at $20 (maturity)		2,500
Class C, 100 new chicks plucked at 6 months at $8		800
Feather income second year		$3,780
Class B value second year at $150	$15,000	
Class C value at 6 months at $100	10,000	
Total value of increase	$25,000	

THIRD YEAR.

Class A, 20 breeders as before		$ 480
Class B, 100 now matured 1½ pluckings at $20		3,000
Class C, 14 months at $15, ½ at $20 (maturity)		2,500
Class D, 100 new chicks plucked at 6 months at $8		800
Feather income third year		$6,780
Class B value third year at $250	$25,000	
Class C, value second year at $150	15,000	
Class D value 6 months at $100	10,000	
Total value of increase	$50,000	

FOURTH YEAR.

Class A 20 breeders as before		$ 480
Class B, 100, 1½ pluckings at $20		3,000
Class C, 100, 1½ pluckings, at $20		3,000
Class D, 100, 14 months at $15; ½ at $20		2,500
Class E, 100 new chicks at $8		800
Feather income fourth year		$9,780
*Class B, value fourth year at $350	$35,000	
Class C, value third year at $250	25,000	
Class D, value second year at $150	15,000	
Class E, value 6 months at $100	10,000	
Total value of increase	$85,000	

*Class B are now old enough to be paired off as breeders.

FIFTH YEAR.

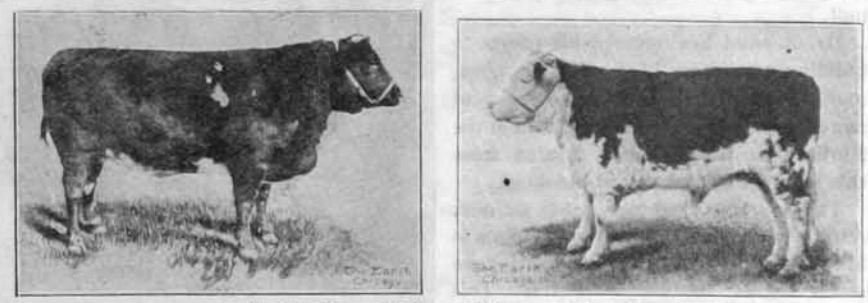
Class A, 20 breeders as before	$ 480
Class B, 100, 1½ pluckings at $20	3,000
Class C, 100, 1½ pluckings at $20	3,000
Class D, 100, 1½ pluckings at $20	3,000
Class E, 100, 14 months at $15; ½ at $20	2,500
Class F, 100 new chicks at 6 months at $8	800
Feather income fifth year	$12,780

Alfalfa land in South Africa, by reason of the fact that ostriches are raised upon it, is worth $1,000 per acre, and there is no reason why alfalfa land in the Salt River Valley in years to come, when ostriches have increased so that the business is recognized as the great industry which it is bound in the future to be, should not be worth the same figure. It will only be a short time until feathers will be manufactured in the Salt River Valley as well as raised here. Mr. Pickrell, a large raiser of birds, is making arrangements to start a manufacturing plant.

The following are some of the persons engaged in the ostrich business in the Salt River Valley:

Pan-American Ostrich Company, E. B. Gage, president; H. J. McClung, manager, Phœnix, Arizona; A. J. Chandler, Mesa, Arizona; J M. Harmon, Phœnix, Arizona; R. Wickey, Phœnix, Arizona; McNeil-Wylie Ostrich Company, Phœnix, Arizona; Arizona Ostrich Company, Phœnix, Arizona; National Ostrich Company, Phœnix, Arizona.

The above names are given in order that any one reading this article can verify its statements or obtain additional information by addressing any of the parties whose addresses are given.



Salt River Valley Thoroughbreds

Horses of Quality

By J. C. Adams

In all probability there is no person better equipped to make a comparison of the Salt River Valley with other parts of the United States, regarding the breeding and raising of horses, than is J. C. Adams, of Phœnix, Arizona, the owner of the Adams Stock Farm and racing stables. Mr. Adams, being widely traveled and thoroughly familiar with the needs and demands of horsemen, claims the Salt River Valley is the best equipped section of the United States for the industry in which he is largely interested.

Save for the sunkissed plains of Arabia, no other locality, either in Europe or America, offers the ideal environment for the raising of horses equal to that of the Salt River Valley. For the training of speed horses there is no question that this is true. No other locality has the days of sunshine, the small percentage of rainy days, and such perfect weather twelve months in the year. An added advantage is the unlimited supply of feed obtainable in the Valley.

Years ago, even before the first territorial fair at Phœnix, trainers of fast horses brought their stables to our Valley during the "shut-in" winter months in the East, knowing that the horse here would have an opportunity to train, to be kept in condition, and develop speed for the coming racing season. This as a welcome contrast to spending the winter season at eastern quarters in closed stables, without proper chances of work-outs.

Since the inauguration of the Arizona Territorial Fair of 1905, which resulted in the building of the mammoth fair grounds, large roomy stables completely appointed to please the most exacting trainer, with the fastest half and mile tracks west of the Mississippi River, enthusiastic horsemen from all parts of the country have brought their strings of racers to these quarters during the winter months, yes, for all seasons of the year.

The two tracks, built under the supervision of an expert, are as near perfect as it is possible for them to be. As previously stated, our mile track is the fastest in the West. Mr. Gatcomb, who brought Audubon Boy to our 1906 meeting, spoke in very flattering terms regarding our track and general conditions in the Salt River Valley for the raising and breeding of fast horses. Audubon Boy made an exhibition going a mile in 2.02 flat. Other horses of prominence did their best work of the year at this meeting, and on the Phœnix track. H. G. Hersey, driver of Dan Patch, when he visited Phœnix in 1907, stated that our track was the fastest he had ever seen. Dan Patch clipped off a mile on this track in 1.57½, a record not made since the pacing of the 1.55 achievement in Minneapolis in 1906, driven by the same driver, Mr. Hersey.

A Horse of Quality—Bred in the Salt River Valley

It has been proved again and again that horses which are raised and trained in the Salt River Valley condition and develop faster then is the case in other localities. Not only horses which are bred, raised and trained here, but those which are brought to this locality, after a season secure great benefits. It has been noticed by horsemen that after their stables have been wintered in the Salt River Valley, better showing is made by them during following seasons.

The trainer of Argot Boy spent the season of 1906 in the Valley, with a part of his stable, and in November during his stay took a race from Queen Pomona, pacing a mile in 2.03¼, the present record of the Phœnix track.

Last year's returns made by horsemen to the tax department of the Territory show that there are over 100 stallions, over five thousand saddle horses, over fifteen thousand work and range horses and two thousand speed horses in the Salt River Valley, showing conclusively that the advantages of the horse racing industry is not overlooked in this community. The territorial laws do not allow the entrance in Arizona of anything but stock in perfect health. Every animal brought into the Salt River Valley has to pass the examination given by an inspector. Tuberculosis and other infectious diseases among horses are here unknown, and the animal develops into the most perfect, healthful specimen possible.

As a result, the Arizona horses command top-notch prices everywhere. They are horses of quality, because they cannot be otherwise, the sunshine and the air combining to make them so. Owners of fast horses will make no mistake by looking into the conditions surrounding the horse-breeding industry in the Salt River Valley.

Dairy Cows *in the* Salt River Valley

By R. H. Greene

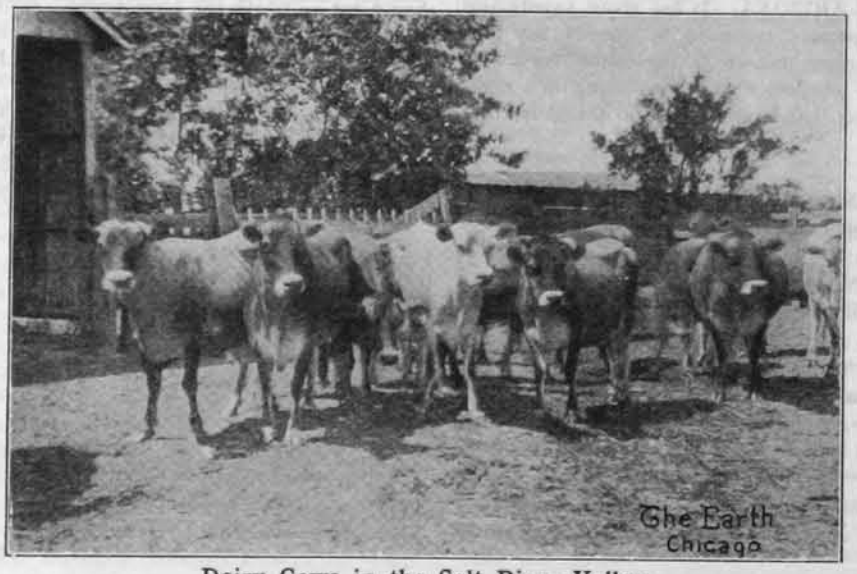
What the dairy cow will do, when she is a good cow and what her offspring can be sold for, if she is a thoroughbred, is illustrated by the herd belonging to W. H. Renaud.

Mr. Renaud came to the Salt River Valley some years ago, having been raising, to use his own words, "broncho cows," for some years, in the valleys of the mountains, but, seeking a more congenial occupation, located near Phœnix, purchasing 200 acres of land three miles from Phœnix, to the northwest. His idea was to raise good milk cows; hence he made a trip through the Middle West and as far east as New York state, examining different herds of Holstein-Fresian cattle. He finally selected what he wanted, the herd being headed by an excellent bull.

Mr. Renaud has devoted his efforts to building up a dairy herd second to none, and to-day probably is the possessor of more good milk cows than any man in the Southwest. His financial returns from this herd are almost record-breaking.

The average yield per head, in milk returns alone for the year of 1908, was $112.35. Individuals in this herd gave much higher returns than this. This figure is simply the price received for the cream sold, Mr. Renaud having a small cream separator, and separating his milk at home, thus saving the skim milk for use as feed for the young stock and hogs. Skim milk is well worth 15 cents per 100 pounds, as stock feed for young cattle or pigs.

The monthly receipts of this herd of forty-five cows, of which only thirty-seven on an average are milked at any time, are given below, for the year of 1908.



Dairy Cows in the Salt River Valley

RECEIPTS.

His young bull calves sell as two-year olds for $125 per head, the demand always exceeding the supply. His heifers are kept and brought into the herd.

Now the question naturally arises, how are these results possible? First, by keeping good cows, and second *the climate*. These cows live in and on the alfalfa they get for feed. When it is taken into consideration that every month in the year, in the Salt River Valley, green growing alfalfa is available for pasture, then and then only, can we realize what superior advantages are offered to the dairy industry.

Mr. Renaud feeds no grain of any kind, but, during the winter months, gives his cows all the alfalfa hay they will eat. One acre of good alfalfa will produce eight tons of hay when not pastured. Mr. Renaud is carrying continually 138 head of cows, horses and young stock on his 200 acres. Alfalfa makes this possible, and the Salt River Valley makes much alfalfa possible. No barns of any kind are necessary, merely open sheds for the dairy cows during the winter months, the weather never reaching the freezing point.

There are 10,000 head of good, fair dairy cattle in the Salt River Valley to-day, and yet we are importing butter by the carload to tide us over the periods when the demand exceeds the supply, which is most of the time.

(Continued on page 41.)

Relief Gold Mine

By George Hamlin

The Relief Gold Mine, some seventeen miles from Phœnix, was located by Samuel F. Webb, in 1894, and was bought from him by the Relief Gold Mining Company, November, 1901. Work of prospecting same was started January, 1902, by first sinking a 500-foot incline. The present owners went thirty feet below water in this incline and then built a small mill, and ran it with the water from this incline. There was only water enough to run it for from ten to twelve hours out of every twenty-four.

With this plant the company has run the 200-foot level west 700 feet, and the 300-foot level, 500 feet. Altogether it has 3,300 feet of work in the mines.

There has been taken out with this little mill about $60,000 and it is very pure gold, bringing in United States mint $20.33 per ounce.

The company owns six full claims—three patented claims and three held by annual labor, which has the work done needed for patent.

There is already a great deal of ore in sight.

More water is wanted but this can be had by sinking in 500 feet incline.

The ore body shows on the surface 1,200 feet; the chute that the ore was taken from is 300 feet, but only about 8,000 tons have been taken out.

George Hamlin,
Superintendent Relief Gold Mining Company.

Freedom.

When all is said, heredity and environment are not the supreme measures of man's possibilities. There is something in man that is independent of his ancestry and of his times, and that is himself—the bit of God that he is. Divinity is master of tendency, let heredity press hard as it may; and infinity cannot be crushed, let environment do its worst.

No man need bear the weight of ancestral woe; no man need be the victim of circumstances. The spirit in each is that spirit which was breathed into the clay that lay insensate among the flowers of Eden, and it makes man master of destiny. The dead past is dead The living present is the opportunity of the ego, and in it the divine self shapes its end—an end which is not slavery, but kingship.

—Clara M. Partridge.

To be able to understand, and appreciate the best that has been said and done, is the fairest fruit of culture; from the most, what is best is hidden.

They never come to a knowledge of the wealth of power and beauty that lies within and around them; but move on the surface of things, unconscious of the infinite depths of being, of which what appears is but the symbol.

—J. L. Spalding.

There is something better than a revival of religion and that is a religion that doesn't need to be revived.

—D. L. Moody.

El Verde Ranch

A Poultry Round-Up, Salt River Valley

Poultry Raising *in the* Salt River Valley

By J. S. Griffin

When poultry raising for profit is contemplated in the northern states the difficulty of carrying the fowls over the long winter always is an obstacle. In the Salt River Valley no such difficulty exists.

Providing green forage for poultry during five or six months of the year is often almost impossible, where a large number are to be fed. But here in the Salt River Valley, this factor is eliminated. Alfalfa is more than 50 per cent of a chicken's bill of fare—chickens can run it here. Alfalfa is not cut as a hay crop, but grows steadily during the winter months, if slowly, it makes the more substantial a feed. It has in it constitutents that are very nearly a balanced ration for fowls, and can be relied on to produce at least six tons per acre, and if properly cared for, eight tons per acre per year. With wheat for a grain food, which takes the place of corn and other grains in the North, we have a ration, together with ground bone, that in the Salt River Valley is giving results that at least are without any comparison in the writer's knowledge. Right here let us illustrate what has been done by a practical man, who, with little capital started in five years ago to raise poultry on a commercial scale.

Mr. Sidell came to the Salt River Valley five years ago with $500 capital. He bought ten acres of land for $60 per acre, paying $300 down, balance on time, with interest at 8 per cent. He paid cash for 160 chickens, at the start, and in three months bought 200 more on time. He increased this number from time to time, always making no purchase he could not pay cash for, and his chickens furnished all the money, at all times, for his expenditures, both for living and improvements. On obtaining 1,000 hens, he stopped trying to run more, devoting all his energy to getting the best results from this number. His net returns, after deducting his feed, he buying all of his grain and bone, have been $1,200 to $1,400 yearly for the last four years.

His ten acres are fenced now, all around with five-foot high Page fence, chicken tight, and also subdivided into five fields, cross-fenced with the same wire, all planted to alfalfa, except the orchard. He has built a four-room frame house and has a good drilled well which cost him $125; chicken houses are ample and well built. All of these improvements have been put on the place with the proceeds of his chickens.

Mr. Sidell has not made it a point to hatch his own chicks, preferring to buy them from a party who hatches chicks and sells them for 15 cents apiece when three days old.

He has always obtained from 20 cents to 50 cents per dozen for eggs of the merchants in Phœnix, and has sold his old hens when too old to lay at from $6 to $8 per dozen. It might be stated right here that Mr. Sidell considers a hen in her prime, as a layer, when three and four years old. The constant supply of proper green food, and absence of cold weather giving a fowl longer life and utility. Pullets start laying at four and one-half months old and seem to be still good layers at four years of age.

The daily grain ration for these 1,000 hens, is one sack of 130 pounds of wheat, costing $2.75, 100 pounds of ground bone per week is also fed, fifty pounds at a time, this costing 3 cents per pound. An occasional meal of oats and barley is given for a change, but this is not in addition to the regular wheat ration.

The month of April, just passed, these chickens paid him $118 over cost of feed, etc.

The Salt River Valley is to-day bringing in eggs from Kansas and the price of young broilers, $12 per dozen, is guarantee enough that the supply is nowhere near the demand. It would take fifty men like Mr. Sidell to raise poultry and eggs enough to supply this demand.

Many people, tourists and others, come to Phœnix and the Salt River Valley every winter, and they must all be fed. Other cities in the Territory are heavy importers of both dressed poultry and packed eggs from outside sources. This demand should be supplied by home products, and the field is certainly here and the profits assured to the energetic man with small capital.

He Might Have Been Somebody.

BY EDMUND VANCE COOK.

He might have been an author and have written many pages
To blossom for a little hour and molder down the ages.
He was clever, he was cultured, he was traveled, he could write;
But the product of his genius never seemed to seek the light.
You seldom saw his name attached to "Letters to the Press,"
But he always wrote a gentle word to soothe a friend's distress;
And when he was in Petersburg, and Peking, and in Rome,
Instead of writing "travels," he was writing letters home.

He might have been an orator and wielded words of fame
To illuminate the nation and to glorify his name.
He was able, he was tactful, he was eloquent of speech;
But he did not spread the eagle and rejoice to hear it screech.
Seldom on the public platform did he ever play a part;
But he always had a happy word to help a heavy heart.
And perhaps his cheerful speeches were too simple for the stump;
But they made a fallen friend forget he'd ever had a bump.

He might have been a scholar with a string of high degrees,
And have found some hidden meaning in a play of Sophocles;
But, instead of ever studying the dim and ancient letter,
He was studying his little world and how to make it better:
How to do some little kindness, common to the passing eye,
But which the hurried rest of us had noted —and passed by.
He might have been somebody on some self-encircled plan,
If he hadn't been so busy being something of a man.

—Exchange.

It is not fanaticism that opposes progress—it is simply inertia.

A civil tongue and a deaf ear mean money in the bank.

To lose your identity in the business is one of the penalties of working for a great institution.

Farming on Twenty Acres

By Arthur L. Waterhouse

Taking the evidence of the past and present as a guide, the future holds a pleasing prospect to the owner of twenty acres in this region of sunshine and enterprise.

To the practical farmer as well as to the business man grown weary of the everlasting struggle for existence in the larger cities, these lands afford not only a home, a real home, having in mind the highest meaning of the word, but they offer to any intelligent man or woman a good income.

However, it is not sufficient that we consider only the product of intelligent effort on rich soil with abundant water in terms of dollars and cents. There is another phase in the answer of the question "What can be done on twenty acres in the Salt River Valley?" To begin with, this is a prosperous section *now*. We are not waiting for prosperity to show up some time in the dim future, but we want a larger growth, a larger prosperity, as all live communities should, hence this effort to place before the people, in less favored sections, the natural advantages found here.

These natural advantages are *climate, soil, water* and *level land*; and to this, man has added *electrical power*. With power for our suburban trolley lines, for lighting and for manufacturing, transforming our wool, our cotton and other raw materials into finished products, it is not hard to see something of what the future holds in store. Please bear in mind that we are dealing with the *present*, but we have a right to regard the future optimistically.

This condition of things to the land owner means a market. Without a market, for his products the owner of twenty acres is a king compared with his brother in the cities, for he produces everything that he can eat, but with a market and that a prosperous, growing one, his land is worth a great deal to him.

Under this heading we must remember the mining industry and all that this implies. The miner must be fed and he demands and gets the best the market affords. We of the Salt River Valley are surrounded by hills highly mineralized with gold and copper; this means labor, and labor means a market for what you produce on your twenty acres. Remember that this question of a market has a most important bearing on the value of your land.

While the owner of twenty acres cannot engage in all of the forms of production, there is a wide variety to choose from. This variety cannot be elaborated upon in this space, but from the following record of what has been done under circumstances less favorable than now obtains, the reader can make his own deductions.

The case of John Forney, of Glendale, may be here cited (from the Arizona *Republican*) from a careful record of income and expenditures. During the year Mr. Forney sold from his ranch and received from other sources the following amounts:

RECEIPTS.

Eggs	$394.85
Poultry	77.05
Butter	102.30
Jersey stock	98.35
Alfalfa hay	672.30
Alfalfa seed	37.80
Corn	45.50
Fruit	41.10
Received for labor from others	80.20
Received for poultry premiums at territorial fair	12.50
Received from miscellaneous sources	30.25
Total receipts in cash from all sources	$1,592.20

DISBURSEMENTS.

Paid for rent of ten acres	$ 10.00
Paid for water for thirty acres	75.00
Paid for seed and feed	104.75
Paid for labor	10.90
Paid for poultry	21.30
Paid for family supplies	295.55
Paid for dry goods	156.35
Paid for school books	7.55
Miscellaneous expenses	144.70
Taxes	24.50
Total expenses of the ranch and family	$850.60

It will be seen, therefore, that John Forney and his family of eight, living on a twenty-acre ranch, took in during the year 1907, $1,592.20, lived the comfortable life of farmers at an expense of of $850.60 and had at the end of the year a net profit of $741.60. Among the things not mentioned are included all the vegetables the family required which were raised on the place but are not considered on either side of the account, as none were sold and the item is a part of that general head which is indicated by "the comfortable life of a farmer."

We are further indebted to the same source for other records following:

J. W. Black says: I have realized over $30,000 from my ranch of forty acres in my ten years' residence. Last year I cleared $3,000. On three acres of strawberry plants, one and two years old, I received 29,000 boxes, at 10 and 20 cents per box, and paid 2½ cents per box for picking.

Mr. Black sold $1,300 worth of melons from a five-acre piece; one acre of tomatoes in 1905, brought $700. In 1906, one and one-half acres of watermelons returned $638.60. Four hundred hens brought returns of $600 in eggs, and all the feed was grown on the ranch.

J. P. Graham, five miles northwest of Phœnix, on twenty acres of alfalfa, netted above all expenses $23 per acre.

John C. Jackson, R. F. D. No. 1, sold from three acres (measured) $619.60 worth of watermelons.

E. O. Desmet from two and one-half acres of asparagus, received $675.

John D. Smith says: "I have forty head of milch cows. My income amounts to from $250 to $350 per month."

It is hardly necessary to call the attention of the practical farmer to the by-products.

To the twenty or eighty acre dairyman who has good cows and appreciates them, the opportunity in this Valley for contentment and prosperity is unsurpassed.

E. E. Jack, R. F. D. No. 3 writes as follows:

We have about an acre of land that specially shows what can be done under the Arizona canal in the Cave Creek wash. One-fourth of an acre is in oranges and grape fruit, principally the latter. This patch of ground probably receives as little attention as any part of the ranch. It has paid over one hundred dollars a year for each year since we bought the ranch, over four years ago, and the past year's crop brought $151.60 besides all the oranges and grape fruit we cared to use. About three-fourth of an acre in asparagus has netted from $75 to $125 per year.

Recently in an article in a local paper relating to the sale of a $50,000 orange grove there appears the statement that the crop, on thirty acres of the grove brought $10,000. The foregoing facts are taken at random, and we leave them for the readers attention without further comment.

In summing up there is a reason why our lands sell readily for $100, $150, $200, $250 and up according to improvements and location, per acre. They will pay good big interest on their valuation. And aside from the income feature there is the absolute certainty that, with our rapid and altogether healthy growth in population, and the active building of trolley lines, the country property surrounding Phœnix will increase yearly in value.

The Buckeye Country

By C. T. Hirst

The upper end of the Buckeye Valley is about twenty-two miles and the lower end, about forty-five miles, southwest of Phœnix, and comprises about 16,000 acres of splendid land.

The water supply of the Buckeye Valley is among the very best in the Southwest, the canal which serves this country running through the Valley a distance of about twenty-four miles. The dam is located in the Gila River, just below the confluence of the Agua Fria and Salt rivers with the Gila, giving it an underflow from all three of these streams, and at low flows of the rivers the Buckeye has an abundant water supply. This has been proved by over twenty years' continual use.

The canal has now been bought by the farmers under it, they paying for it in proportion to the land they own, no one owning a share of stock in the canal except as he owns an acre of land upon which to use the water.

The management of this canal is careful and conservative. George P. Brown is the secretary, and will be glad to answer any questions regarding the water system or lands.

The soil in this Valley, for the most part, varies from Maricopa gravelly and sandy loam to Gila fine sandy loam. There is a strip of land running lengthwise through the middle of the Valley, comprising about one-fifth of the total acreage, which is heavily impregnated with salt. However, the people of this country do not consider this the detriment which it is considered in many places, as it has been found the salt can be washed out of the land.

There have been some very interesting and successful attempts made at washing the salt out and getting the land under cultivation. The soil is loose and sandy, and there is plenty of fall to the land, so that the water can be run onto the higher parts and the salt washed out. The Gila River carries considerable sediment which is rich in decayed vegetable matter, etc., which is deposited upon this land by irrigation and makes of it as good soil as the very best in the Valley.

There are instances where men have taken land which was white with salt, have planted it to sorghum and irrigated it, using as much muddy water as possible and have entirely reclaimed it, having it in a splendid stand of alfalfa within three years, and it raises as heavy crops as any land in the Valley, and seems to take even less water for the production of crops than some of the other lands.

This land has been proved also to be excellent for vegetables, fruits, etc., as well as alfalfa.

A very full description of how to get the salt or alkali out of land is given in a bulletin issued by the Department of Agriculture, No. 88, entitled "Alkali Lands," by Milton Whitney and Thomas H. Means.

The balance of the land in this Valley is almost entirely free from alkali and consists of Maricopa sandy loam and Gila fine sandy loam, the former soil being on the north side of the Valley next the canal, and having a fall of about thirty to forty feet to the mile from the canal south. This makes it exceedingly well adapted for the raising of alfalfa seed, because the land can be irrigated hurriedly, without soaking it enough to raise too much straw and blight the seed.

For several years past the farmers in this Valley have been raising one, and a great many of them two, crops of seed each season. The yield of seed varies according to the way the land is irrigated more than from almost any other cause. Where too much water is applied the growth of hay is too great and the seed does not mature. The yield per acre has been all the way from two hundred to as high as eight or nine hundred pounds, the atter amount being from two crops in one season. This seed sells at from 9 cents to 11 cents per pound, wholesale, at harvest.

The raising of seed keeps the alfalfa in much better condition than pasturing, owing to the fact that there is more or less seed thrashed out upon the ground, which keeps the stand of alfalfa perfect. The feed furnished on this land for the remainder of the year is enough to pay the expenses of the ranch for the entire year.

Dairying is another profitable industry in the Buckeye Country, where they have plenty of water and splendid feed at all times, so that the dairy cows keep up their flow of milk longer than where there is a shortage of feed at various times during the year.

There are ranchers in this Valley who are selling their milk to the creameries, of which there are two now operating in this Valley, and are getting $10 per month for the product of each cow, and they can keep about one and a half head of stock to the acre on good alfalfa.

There have been but few orchards planted here in the past, but people are paying more attention to this kind of farming now, as they find the trees which have been planted have done exceedingly well, and a large number of small orchards have been planted out during the past two seasons.

Fattening cattle has been one of the main industries on account of the fact

Headgate, Arlington Canal

The Arlington Valley

By H. P. Lewis

The Arlington Valley is a wheel within a wheel, a part of the Salt River Valley, and just like it—only different. The similarities may be briefly treated for they include practically all the natural physical conditions. In this article we desire to call special attention to the differences, the chief reason for individual exploitation.

that fat cattle can be driven from the ranches to Phœnix to market easier than hay can be hauled.

At the present time Phœnix is the nearest railway shipping point to Buckeye. The through line of the Southern Pacific has been surveyed by way of San Carlos to Yuma through the Salt River Valley and will go through the Buckeye Country. This will undoubtedly be built before very long, as the heaviest grades on this route will be less than 1 per cent as against very heavy grades on the present line of this road from Bowie to Gila Bend. This will develop this country very rapidly.

A great many people have gone into this Valley almost entirely without means and have made good. Among this number is Henry A. Hammels, president of the Buckeye Irrigation Company, who came here originally from Illinois, and after living in this Valley a few years moved to Ohio, but soon came from there direct to Buckeye. L. E. Shepard is also one of those who have made good in that country. The postoffice address in both cases is Liberty, Arizona.

James R. Gipson, formerly from Tennessee, Geo. Day of Colorado, Will Walton, formerly of Canada and W. B. Long of Stillwater, Minnesota, have all done exceedingly well in this Valley. Postoffice address in each instance, Buckeye, Arizona.

Song.

Dear, though you wander over peace and passion,
Searching the days to prove yourself untrue,
You can not hide me. Still, in my own fashion,
I shall come back to you.

In other eyes, on lips that bid you doubt me,
In music, in the little things we knew,
In your blind prayers for happiness without me,
I shall come back to you.

God keep you safe through all the ache of learning,
Through all the wrong you need to be and do,
Till in the wise joy of unfearful yearning
I shall come back—I shall come back to you!

—*Brian Hooker, in Harper's Monthly.*

The charity that hastens to proclaim its good deeds ceases to be charity and is only pride and ostentation.

—*Hutton.*

Heading Barley, Near Phœnix

The Arlington Valley is a little agricultural realm of about 5,000 acres, at the western end of the present irrigated area in Maricopa County. It is called a part of the Salt River Valley in this article for the reason that it is the same bench land formation existing on the north side of Salt River, extending westerly beyond the point where the Salt empties into the Gila River. Arlington, then, is actually on the north side of the Gila River. It is one long valley, the name of which changes at an imaginary line assumed to exist by reason of the confluence of the two streams. Phœnix is in the center of the Salt River Valley and between it and Arlington two smaller streams empty into the Gila, namely the Agua Fria and the Hassayampa, the former about fifteen miles west of Phœnix and the latter about forty miles west. Between the two rivers is an area known as the Buckeye Valley, named for its central settlement, but, like Arlington, a part of the great irrigable area known to fame as the Salt River Valley. Technically, it is just as near correct (and no more so) as it would be to say that Jefferson City and St. Louis are both on the south side of the Missouri River Valley, St. Louis in this instance being in the same relative position with regard to Jefferson City as Arlington and Buckeye are to Phœnix.

Gila River, Arlington Valley

In points of resemblance, the subject may be covered by saying that Arlington has the same climate, and same soil for the most part, only that the Salt River section is larger and therefore has a greater variety of soils, and identically the same crops can be grown. On account of its greater distance to market, however, and the absence of railway communication, the Arlington products to date have been chiefly cattle and alfalfa hay, minor crops and fruits being grown only to supply the table demand of the growers. All that has been said of the Salt River Valley products applies equally as well to Arlington as far as natural conditions are considered.

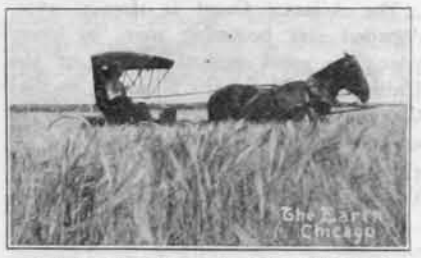
The chief difference between the two sections are two, at this time. One is an advantage and the other is a disadvantage, namely, lack of railway facilities, which condition, it is believed, will be changed within the year by the building of the Phœnix and Buckeye Railway, now organized and engaged in securing right of way.

By the processes of comparison and elimination the reader has been introduced to the subject of the Arlington Valley with one general surpassing advantage to its credit and that is the water condition. It is this general advantage, only, that is to be dealt with for, carrying the facts into detailed analysis, this Valley, like any other part of the world, has some trifling minor advantage or drawback peculiar to each particular township. For instance the varying differences to the nearest store, church or postoffice, the topography, grade and depth of soil, etc.

That general advantage referred to is the water condition. It might seem almost irreverent to intimate that anything could be more nearly perfect than the water condition under the Salt River project of the Reclamation Service. Nevertheless, that is just what the Arlington settlers have, but it must be remembered that it is only a small area, about one-fiftieth of the acreage under the reclamation project, and it is now all in private titled holdings, that have found success in a little co-operative plan not too large to handle and developed under ideal conditions. It is one of the few private irrigating enterprises that have spelled success, and that only because the canal owners are the same men who plow the fields and care for both the farms and the ditches.

The same idea, on a little larger and broader way, is exemplified in the Buckeye section, also watered by a co-operative canal, both Buckeye and Arlington being without and beyond the Salt River Valley irrigation district formed for the building of the Roosevelt storage dam. It is contended that Arlington and Buckeye are even better, for the few who can find homes there, but only because their colonies are smaller and therefore more intensely co-operative.

The Arlington canal and lands go together as in the government project. Every acre has an inseparable ditch interest. The advantages of Arlington property are that its canal head is in solid granite, in one of the few places where a rock head could be secured; its water supply is and always has been more than ample for the small available acreage from the normal flow of the Gila River without storage and, most important of all, the canal is built, is paid for, is in splendid condition and is owned by the farmers. In that respect the Arlington farmers are in the same condition now that the farmers of the reservoir district will be when they get their dam paid for and their project fully completed, and while they do not have the Government behind their enterprise, specifically, they feel that conditions are so perfect they will be equally as secure without the special protection of the Reclamation Service. And the great advantage of the Arlington land holders is that they had the foresight to begin the canal with the acquirement of the land from the Government, the good fortune to discover an ample water supply for their limited holdings, wherefore they have been prosperous from the beginning of the settlement and neither land nor canal has cost as much as elsewhere. It is estimated that the canal has cost the land about $25 per acre. The Arlington district began its prosperity by filing on government land, now practically all under title.



Barley Field, Arlington Valley

The foregoing should explain why Arlington lands can be bought for from $75 to $100 per acre. However, only a small amount of Arlington land is available, but as it soon is to be penetrated by a railway, it is an exceptional investment and as soon as the railway is built, will command almost as high a figure as the land in the reservoir district.

Nothing so appeals to a reader as a specific demonstrated fact. Let us quote the achievement of Andreas Anderson, a comparatively new comer in the Arlington section (no one has been there very long) on his eighty-acre farm during the year 1908. Mr. Anderson had thirty-nine acres planted to alfalfa from which he harvested seed that brought him $1,881.50; hay, $125; pasture, $260. He had twenty acres of sorghum that brought him $340 and a little patch of wheat that returned him $200, a total for the year of $2,806.50 or $35.08 per acre for the entire eighty acres. In addition to this, he pastured the

(*Continued on page 41.*)

Wheat Field, Arlington Valley

Where to Buy a Home

By E. J. Bennitt

One of the most important questions that confronts the growing population of the United States to-day is: Where am I to lay the foundation for my future home and independence in old age? Mr. Bennitt answers the question.

The Atlantic Coast is already overcrowded and becoming more so every year, the great central portion of the United States is rapidly filling up, so that the only region where there is yet unbounded room and opportunity is the great, and all too little appreciated, Pacific Coast.

For more than fifty years the most energetic and enterprising of American citizens have been pushing farther West, returning to their old homes, from time to time, to relate the marvels of this new country which were listened to politely, possibly believed, but not at all realized until comparatively recent years when the Government took up the question of reclaiming some of the millions of acres of rich country that will support an empire when the work is completed.

The first project undertaken was the Roosevelt dam, from which the great Salt River Valley is watered. This Valley is a new country, having been settled less than forty years, but of such surprising fertility, when adequately watered and tilled, that the average eastern farmer or orchardist would consider it mere pastime to live and grow independent here in comparatively few years.

The climate is such that farm work can be carried on every month and every day in the year, our coldest weather scarcely ever going below freezing. In the summer time the thermometer shows a high degree of heat, but owing to the clearness and dryness of our atmosphere, the heat is not nearly so oppressive as a much less degree of that in the East, which is evidenced by a total absence of sunstrokes.

The prosperous farmer, heretofore, has owned large tracts of land and even with a scarcity of water supply has raised immense crops of barley, wheat or alfalfa, which have usually sold at a high price, but with the advent of a permanent water supply, the old time farming has been replaced by more intensive and more intelligent cultivation of small tracts of land. Every acre of land watered by the Roosevelt reservoir is capable of being made a garden instead of the cow pasture for which much of it is used to-day.

The owner of twenty to forty acres of good land under cultivation can make himself independent in a few years by raising any of the profitable crops that can be produced on a small acreage. There is always a good market at a fair price for all kinds of vegetables, fruits and berries.

Five acres of alfalfa, cut and fed, will produce feed enough for ten head of cows for twelve months, and the average revenue from a good cow is $75 per year. Or if used exclusively for hay, good land will produce an average of eight tons of alfalfa hay per acre, which has sold at an average price, for several years past, of $10 or more per ton.

Then, if one desired to raise fruit, there is no section of the United States where growth is so rapid and the bearing period comes so quickly to trees and vines. Orange, lemon and grape fruit will begin to bear three years after planting, and at five years will produce an average of one box of fruit, worth in our local market about $3 per box, and the choicest oranges shipped bring an average of $6 per box. Oranges are ready for market about November 15. There are now only about 500 acres of bearing oranges, but about 500 acres will be planted this year, and already trees enough have been ordered to plant 1,000 acres next year.

There is now only about twenty-five acres of grape fruit in bearing, with fifty acres of new planting this year.

All of the leading kinds of grapes thrive here, especially the raisin and heavy wine grapes. Our Thompson Seedless grapes for several years have sold at high prices in the eastern markets and yield abundantly.

The prices realized for our products might seem to a person not familiar with our climate and local conditions very high, but it must be remembered that our winter is mild, our sun warm and our seasons earlier than almost any part of the United States. We have strawberries ready for market by March 1; dewberries, May 15; blackberries, May 25; logan berries, June 20; raspberries, June 25; apricots, May 15; peaches, May 25; apples, July 1; plums, July 10; grapes, June 15.

Our sugar-beets grow all the year but are planted in the fall to mature from about May 1 on, and there is no limit, except beets, to the length of the factory run.

The price of our improved farming land is no higher than for improved land in the Middle West and when taken in comparison with the amount of crops we can raise, two crops of cereals or four, five and more crops of alfalfa, the first natured crop being ready to cut by May 1, makes our poorest land much more valuable than the best of land that has to depend upon natural rainfall.

Much of our land is yet uncultivated and can be purchased at very moderate prices. Water can be had for this class of land this fall so that the homeseeker with small means can take a piece of it and in a few years make for himself such a garden as no other place in American can produce in twice the time.

Our greatest need is good, live, energetic farmers with a moderate amount of money to come and make their homes with us and those who come, we will make independent in a few years, if they will only do their part.

We have a good country in which to live and a better country in which to invest. You can buy an improved farm or orchard and make it better, or you can buy what appears to be a desert and sell it for a garden in a few years.

All we ask of you is to come and see what we have to offer the homeseeker. If you are not satisfied, you will be glad you came and when you go home and compare our great Salt River Valley with your own home country, you will come again and make your home with us.

A Date Palm in Bearing, Salt River Valley

Date Cultivation

By F. H. Simmons

An entertaining and instructive article, especially interesting to those who give dates a prominent place on their bill of fare.

I am in charge of the Co-operative Date Orchard at Tempe, Arizona. The first importation of trees for this orchard arrived from Africa in 1899. This shipment consisted of only six trees; none of them lived. In the year 1900, there was a large importation of 405 trees, of which more than 60 per cent were successfully grown, and these, with small additions from time to time, give us about 500 trees of 135 varieties covering an area of twelve acres, thus giving us the largest date palm orchard in the United States. A few of the trees commenced to bloom the second year after planting. Authorities on date culture say in their native clime they rarely bear before the eighth year. Our orchard shows every indication of a large crop this season, having pollinated more than eleven hundred blooms to date. Perhaps all of your readers do not know what is meant by the term "pollinating." Date trees are both male and female, which they are is determined by the flowers. Both the male and female flowers are inclosed in a pod when they first appear. The male bloom is large and thick, and when it bursts open has the appearance of dried white flowers and is full of white flour, called pollen, which must be put on the fruit-bearing blossom, which causes the dates to set and form seeds in them. Occasionally the dates set on a few blooms without being pollinated. In such cases they have no seed, and the dates are very inferior in quality. In the year 1907, there was one tree in the orchard, five years from planting, which bore more than $40 worth of dates, had they been sold. These dates, like all the better varieties, were seeded for experimental purposes.

At our territorial fair, held in Phœnix last fall, we exhibited twenty varieties. Many of them were superior in size and flavor to the imported fruit. We are using very salty land for the growing of these dates. Fortunately there is a very small proportion of such land in Salt River Valley, and when the Reclamation Service puts in its pumps to drain the underflow, these lands will become valuable for alfalfa and grain as well as dates. In conclusion, I would say all investors in Salt River Valley land should not only dwell under their own vine and fig tree, but should have a few dates as well.

Tempe, Arizona.

Markets of the Salt River Valley

By N. A. Morford

The wealth and the prosperity of an industrious agricultural community depend on two things, viz., the capacity of the soil and the available demand or market for its products.

Without ample markets the productivity of the soil avails but little. This fact has led to many doubts and many inquiries as to the possibility of the development of the Salt River markets to anywhere near its productive capacity when the Government irrigation system, now in course of construction, shall become available. Even to-day a letter reached the writer's table with the question: "Where can you find a market for your produce?"

The question is a natural one, from one unacquainted with this Valley, the rapidity of development, growing population and the numerous and important industries of the Territory.

Answering such a question in general terms we would say that our market is the Territory itself, meaning, thereby, that the Territory can consume all and more than all of everything that its greatest development will ever be able to produce, except beef and mutton and its mineral products.

While the Salt River Valley sends out of the Territory large quantities of perishable products at certain seasons of the year, such as cantaloupes, oranges, grape fruit, watermelons, etc., it remains an important fact that the Valley produces but a very small fraction of our annual home consumption of anything save beef, mutton, wool and possibly cantaloupes.

LIVESTOCK AND WOOL.

Arizona supplies, mostly through the alfalfa fields of the Salt River Valley, the beef and mutton of the Southern California markets and sends large quantities of these commodities to Kansas City, St. Joseph and still farther eastward. Most of these products are bought on foot in this Valley, extensive areas of alfalfa having become the finishing fields for much of the range stock of the Territory, especially that of central Arizona, though not a little livestock finds its way to our alfalfa fields from Mexico.

These conditions have made the Salt River Valley an important livestock market. Buyers from the East and the West come at all seasons of the year, the stock is bought in the fields and the stockman merely delivers it at the nearest railway station, which is never far away.

In a similar way this Valley has become an important market for wool. The sheep men of the Territory drive their flocks from the ranges in the winter months to the neighborhood of the Valley for lambing and shearing. During the shearing season the agents for eastern wool men throng the Valley and the shearing camps which are usually established near some railway, and almost the entire wool product of Arizona is marketed here in the Salt River Valley. Lambs and mutton are also marketed here. The livestock men of the Territory do not and never will need to hunt for a market east or west; the market comes to them.

GRAIN AND FLOUR.

Our markets for wheat, flour, barley and hay are purely Territorial and so far is it from being satiated that a continual importation of flour and wheat is going on from one year's end to another. If the agricultural lands of this great Valley were wholly devoted to the production of wheat, and that wheat were manufactured into flour, it could not supply the markets of the Territory with that commodity. But that will never happen; land that produces crops worth from $75 to $500 per acre can never be used for raising wheat or barley.

The market for hay is almost entirely local as the crop is mostly fed to range stock here on the ground. A small amount of it goes to other portions of the Territory; the entire shipment last year amounting to but 7,500 tons.

Territorial markets took all the barley we had to spare last season and shipped in besides thousands of tons from the outside. The Salt River Valley sent to other parts of the territory but about 6,000 tons, a mere bagatelle of the amount required.

CANTALOUPES AND WATERMELONS

Owing to the perishable nature of our cantaloupe product it is necessary to ship to outside and sometimes distant markets, especially as the time covered by the maturing crop is very short. However, notwithstanding these urgent features of the marketing of this crop the growers of this Valley, last season, succeeded in disposing of something over 5,000 tons of cantaloupes in shipments to eastern cities at a fair profit; and our Territorial and near-by markets took something like the same amount and at a great profit, though the earliest shipments east were disposed of at $3.50 to $4 per crate.

Watermelons were shipped to other parts of Arizona during last season in partial supply of the demand to the amount of 2,750 tons, which with the home consumption must have covered a product of somewhere near 5,000 tons.

ORANGES.

The orange in this climate is a most desirable fruit at all seasons of the year; and yet fully three fourths of the crop, all the large, medium and semi-medium sizes are shipped to eastern markets where the splendid and unexcelled color, flavor, and cleanliness of the fruit creates for it a market that is never satisfied and prices realized that are not commanded by that fruit from any other part of the world. During last season 30,000 boxes of this luscious fruit were shipped to eastern cities where prices ranged from $3 to $8.50 per box. During that time Southern California was diligently marketing her crop in Arizona, at 90 cents to $2 per box. Our local crop was entirely disposed of within ninety days after it came into the market, but we continued to consume California oranges the entire year.

Under such conditions it stands to reason that our orange market will never be overstocked with local fruit as we have absolutely no competitors in any market we care to ship our fruit into.

HONEY.

There is a lively demand in eastern markets and an extra good price paid for the honey product of this Valley and of this entire region of country. It is sold wholesale to the manufacturers of sweets. To such an extent has this market become insistent that almost the entire honey product finds its way to the East where it commands every market it has reached owing to its high flavor and color. As a consequence Arizonans consume Southern California honey as well as oranges, though they do not generally know it.

While over 200,000 pounds of strained honey were shipped into eastern markets, almost entirely to manufacturing concerns during last year, it was possible to fill but a limited part of the demand. The fact that it is shipped out of the Territory at all, where much more than the supply could be consumed, means that it is of superior quality and a more profitable market is reached where higher prices are paid.

SMALL FRUITS AND BERRIES.

Small fruits and berries are produced in the Valley in considerable quantities but never approach a supply of the local demand for those things. In fact Southern Califorina is shipping that sort of fruit into the Territory. Generally our fruits are out of the way, so far as the local supply is concerned, before outside supplies can reach us owing to their more tardy seasons.

POULTRY AND EGG MARKET.

Our poultry and egg market is indicated when it is known that eggs will command an average price of 35 cents per dozen during the year, and poultry is never less than $6 per dozen on foot. There is more than an independence in this business alone, for those who know how to handle poultry, as there is no danger of the market ever being over supplied either from home production or from outside shipment.

MARKETS PRESENT AND FUTURE.

It has been necessary to be somewhat specific in noting the various products of this region of country in order to show their markets and their market-making powers. There is no reason to presume that our present market conditions will greatly change with further development of available cultivable area of the Valley upon the completion of the government irrigation project, and the consequent supply of water to most of the lands of the Valley. It must be taken into account that with increased area and a certain water supply, cultivation of the soil will become most intensive and the population must largely increase, hence an increase of our local markets of no mean proportion. Furthermore the population of the Territory is increasing with phenomenal rapidity and to such an extent that the products of the Salt River Valley are but a drop in the bucket of territorial demands. Although Arizona leads the world in the production of copper, our mining interests are merely beginning to awaken; not the next generation, nor many generations after it, will see the limit of our development in a mining way. This all means population and population means demand for food products of every kind, especially of those that can be obtained from the Salt River Valley in greater perfection than from any other available region of country outside of Arizona; and Arizona has but a limited supply of lands that will yield such products.

To add to the availability of the markets of the Salt River Valley it should be noted that all centers of population of Arizona are now reached, readily, by railways and those portions with light population are rapidly coming into communication with this favored Valley by the construction of new railways. The difficulties of want of transportation are now things of the past for this region of Arizona, and every day sees still further area conveniently added to our markets' territory.

A little study of the increasing possibilities of our markets will soon convince the most skeptical that, increase our productions as we may, the time will never come when the markets of this Valley, varied as they are, will overtake population, or will overtake demand.

At Scottsdale

By Major Winfield Scott U. S. A. Retired

Major-Chaplain Scott has been all too modest in telling of his wonderful achievements that one must really see to appreciate.

I have had twenty years' experience on my ranch of 260 acres. I have raised both citrus and deciduous fruits. Have shipped in car lots and by express. Grapes do well—Muscat of Alexandria, the raisin grape, does very well, although inclined to drop some of the first crop unless handled right in irrigating. I made twenty tons of raisins one year. The grapes have more saccharine than the California grapes and will make ten pounds more of raisins to the hundred pounds of grapes. The Lady Downing, Black Hamburg, Black Muscat, Thompson Seedless and several other varieties do very fine and are heavy bearers. Thompson Seedless ripen by July 1 and I shipped Muscats in car lots July 25.

Apricots, peaches, nectarines, pears and figs are a sure crop. Early apricots are ready for market from May 8 to 14. They bring by wholesale from 3 to 4 cents per pound. No better oranges, lemons, pomelos (grape fruit) can be found in the United States. I am raising them all successfully and at big profit.

The alluvial loam land about Scottsdale is especially adapted to the raising of sweet potatoes and peanuts. I raised the bermuda potato that yielded from twenty to thirty tons per acre. They are crisp and sweet and boil or bake dry and mealy and are not excelled anywhere. They bring from 2 to 3 cents per pound. I planted the Virginia peanut and they did well. I sold the crop by the ton at 6 cents per pound. All kinds of garden truck—peas, beets, lettuce, onions, cabbage and cauliflower—grow abundantly. This is the home of melons and cantaloupes.

Peas, beets, onions, lettuce and cabbage should be planted in the fall, as they grow all winter.

This is the best alfalfa country in all the West. From five to six crops can be cut that will yield from one and a half to four

(Continued on page 41.)

Arizona Summer Resorts

By Will Robinson

A story full of interesting facts, entertainingly told by a writer known to many magazine readers.

In summer Phœnix is hot—there is no doubt about it. After the Fourth of July the thermometer gets up to near the 100 mark every day and stays there until about three in the afternoon. Fortunately, there are extenuating circumstances. Practically there is no humidity—that explains why sunstrokes are unknown, why haying, threshing and beet-harvesting go merrily on through the hottest part of the summer.

Other extenuating circumstances are the soda-water fountain, ice-cold watermelons and the nearness of Arizona's summer resorts.

To be entirely frank about the matter, if you are in moderately good health, do not shut yourself up in a closed house or office, but lead an active life out of doors; if you follow tropical customs and go to work early, and lengthen your rest period at noon, you will get through the summer very well.

Still, if circumstances will permit, by all means take a vacation. As was said of the tramp, the change will do you good.

In the matter of summer outings, "Phœnicians" are more than ordinarily tempted because there are so many charming resorts near at hand. That may be a new thought to you, so let me repeat it: Arizona has within its borders as fine a summer climate as may be found in the world. There are places within the Territory where *hot weather is absolutely unknown*, where even in August, you sit before an evening fire and sleep under heavy blankets. It is a matter of altitude. From sea level to 2,000 feet, the winters are warm and the summers are hot. From 3,000 to 4,500 feet, there are occasional sprinkles of snow in the winter and the summer days are sometimes warm but never hot. From 5,000 to 8,000 feet, the winters are cold; the summers are cool with a mountain air more sparkling than wine and a genial sun that is jewel-like in brilliancy.

But are these summer Elysiums accessible? They are. The most popular resorts, because the easiest to reach, are Prescott, Iron Springs, the Grand Canyon, Williams and Flagstaff. Cheap excursion tickets are sold to all of these places. You get on the train at Phœnix at eight o'clock and you reach Iron Springs at two o'clock; stay on the train half an hour longer and you reach Prescott. If you wish to go to Flagstaff you must leave Phœnix by an earlier train and you reach the skylight city at eight o'clock in the evening.

The time to the Grand Canyon via railroad from Williams to El Tovar, is about the same.

Iron Springs is a place of rest and recreation, pure and simple. About ten years ago a delegation of Phœnix business men, casting about for some suitable spot in the mountains where they could send their families away from the heat and yet be able to spend the week ends with them, hit on Iron Springs. It is a beautiful spot among the peaks of the Bradshaw Mountains, 6,000 feet above sea level, and ten miles from Prescott. The place is controlled by the Iron Springs Outing Club, which is glad to enroll on its list of members, all proper persons. There is a postoffice, a store, a clubhouse where meals and rooms may be had by transients, and some eighty inexpensive bungalows, which are the individual property of its members. An orchestra is produced for entertainments during the season and religious services are held on Sunday. No intoxicants other than mountain air and summer-girls' smiles are vendible.

The altitude of Prescott is 5,000 feet. Here cottages may be rented or comfortable accommodations secured at good hotels. Murphy's Park, Whipple Barracks, which recently has been enlarged by the War Department, and various nearby mines are points of interest. The mountain roads are good; the scenery superb.

Flagstaff is 7,000 feet above sea level. Like Prescott and Iron Springs, it is situated among the pines. Northward from Flagstaff a few miles, rise the San Francisco peaks. After the summer rains, which come about the middle of July, there is a carpet of green everywhere. As may be said of all the resorts mentioned, the summer markets are good and prices reasonable. Peaches, pears, apples and the finest vegetables are brought in from nearby ranches. Melons, apricots and the more tropical varieties of fruits are brought in by rail from the warmer valleys to the south.

Lying sixty miles north of the Santa Fe Railway is the famous Grand Canyon. The canyon is too big a subject to be entered into here. We will be content to linger on the rim. The canyon is made up of sheer precipices, titanic chasms, precipitous rocks. At the bottom thunder the waters of an untamable torrent. It is sublime—awful! (The reader may supply the rest of the adjectives.)

The rim is exactly what the canyon isn't. Extending back for miles, lies peaceful woodland scenery. During July, August and September the ground is covered with grass and flowers. As you walk through the beautiful aisles of pine trees, the unmistakable tang of the air tells you that you must be in the mountains; but the peaceful scene about you is more suggestive of parks and glades than rugged peaks.

For accommodations, there is the magnificent El Tovar hotel, the cheaper but comfortable Bright Angel camp, or you may pitch your own tent and play your guitar to your own camp fire.

If you are a Nimrod or an adventurer who wants his Nature straight, you may pack your burros with bacon and beans and hike for tall timber. You will find the mountains and forest primeval. Streams full of mountain trout and canyons where the deer still stalk and the bears prowl.

But if you like your Nature tempered somewhat with the comforts of civilization you will stick to the environs of the Santa Fe Trail.

A City of Comfort

By W. H. Robinson

This is a description of one of the most delightful spots in the Southwest.

In Arizona, in the days of the "Butterfield Stage," and "Billy, the Kid," a town always started with a saloon. This furnished the inhabitants with the necessities of life; afterwards, as the town grew, a combined grocery and dry-goods store was opened to supply the luxuries.

It is a long road from that antiquity to the present Arizona city, Phœnix, with its motor cars and orange groves, concrete office buildings and mahogany-furnished banks. For years the great mineral and agricultural wealth of Arizona have been bringing in the miner the mechanic and the horticulturist. Now, the superb winter climate of the southern valleys is also attracting people whose means permit them to make their winter homes where the plumbing freezes not and the garden supplies green vegetables at Christmas. After coming 2,000 miles for climate, the sojourner naturally does not care to encase himself in brick walls. He wants to get out into the country, but he wants to take his luxuries along with him.

In California, to supply this demand, around their San Franciscos and Los Angeles they build a Berkeley or a Pasadena. So Phœnix, the metropolis of Arizona, is to have a suburb of country homes and city comforts at Ingleside. This new suburb lies about eight miles northeast of Phœnix and a mile south of Camelback Mountain. Situated in the center of the oldest and largest orange grove in Arizona and traversed by avenues and lanes, shaded by olive, pepper and ash trees, its site is one of peculiar charm.

Attracted by these congenial surrounding the Ingleside Club has been organized, and its 150 foot long clubhouse is now being built.

While the overhanging eaves and wide porches of the bungalow have been incorporated in the plans, yet the sharp roof and style of its dormer windows suggest the Swiss chateau.

The outside of the building is to be finished with cement plaster, in color, a soft gray.

The clubhouse is to be the center of a cluster of houses, all of harmonious architecture and all designed by Dwight H. Perkins, one of the foremost architects of Chicago.

A system of waterworks and sewerage is being constructed and everything possible is being done to insure to the inhabitants of the new town every possible comfort.

Building restrictions are rigid. No unsightly structures of any kind will be erected.

Stables and outhouses of all description will be prohibited. Horses may be kept at stables provided, within easy call by telephone.

Ingleside is not a sanitarium colony. There are other splendidly equipped places in the Valley that cater to the comforts of the invalid. It is Ingleside's ambition, rather, to keep well people, well.

Ingleside already boasts of the finest golf links in Arizona. Polo grounds and tennis courts will be constructed soon.

"GOING BACK"

By Marjorie L. Russell

This is a sketch of an Arizona winter resort patronized by many well-known eastern people. A beautiful booklet, profusely illustrated from actual photographs of the place, will be sent free on application to THE EARTH.

Yes, I am going back. It's for the fifth time, too, and what's more, I hope that I shall be going back some time during the winter of each of the years still allotted to me. And, if for no other reason than just that of going back and getting there and, best of all, of being there, I trust the allottment is no meager one and that I shall be long in the land of the living—always in anticipation, when not in reality, going back. Going back to be as close to "Kingdom come" as one often gets in this life.

Once there, I stay; that is, I stay until the last guest, barring myself as the one honorable exception, has been bade a kindly adieu and has reluctantly departed. I stay until the chef, and one by one his able assistants take their leave and the lesser "help" melts gradually away singly and in detachments—and the management begins to make apologies that really, I quite appreciate, ought to be rebukes. I remain deaf to courteous hints thrown out about the season's being "over." Staying here is just several degrees more satisfactory than "going back" even with *it* as an objective point.

So I just keep staying on. The big, inviting, gray Stone House, in its bower of every known tint and tone of green, has closed its hospitable doors. The charming bungalows, with their shades drawn down, look for all the world like the faces of fast asleep friends. From their wide balconies and verandas I catch no familiar flutter of summery, feminine drapery; no odor of good smoke floats down from above to me. There is no clink of ice in fragile glasses, no faint fragrance of brewing tea, or hum of gay voices—no cordial "do join us"—in brief, no anything that *was* when the season was young, middle aged, or even old. Nothing, and yet everything, for the place itself is still itself, not one whit less entrancing for the brooding quiet that envelops it.

"A land of vision it would seem
A still, and everlasting dream."

The palm court is as still as the nave of a dim old-world cathedral after the vesper hour. Not even the ghost of a lost chord haunts the music room. In the pleasant, restful library hundreds of good books of every description stand upon their distinctive merits and have it all to them-

selves. The card room, the smoking room and the quaint "grill" are wrapped in silence.

In the great airy dining room, where I and many others have feasted the season through, on the best of every good thing that ever grew in the sun-warmed lap of mother earth, or swam, wore fins or feathers, or went on hoofs—"I feel like one who treads alone some banquet hall deserted." Yes, it was "home cooking" and a perfection brand of it. And we could watch the "garden grow" that supplied us with so many crisp, fresh things; beside the grape fruit and lemons there were the oranges that came to us full of the sweetness that comes only to fruit that the sun kisses into rich ripeness. And there was always delicious fresh butter, cream and milk from "our own dairy" that disease has never touched.

Nothing about the living room shouts "hotel parlor" at one—it's just big and roomy and pleasantly in satisfying harmony and perfect keeping with the place.

Through the wide arches of the broad porches—they'd call them galleries in the South—sifts the gold of the sun by day, while at night they frame the star spangled banner of the heavens against which, sharply outlined, looms St. George's Crest and Salvation Peak, behind which the youngest evening stars play hide and seek until the moon comes up and sends them to bed.

I pause beneath each arch, for I would carry away with me the picture framed by each in turn, each fairer than the last. Soon I shall have turned the corner and face the court where the fountain plays and electric lights twinkle everywhere among the dark green of tall palms and orange trees and gleam into the rippling, purling little brook that busily all the night and day offers a drink to the roots of the countless growing things that line the driveway—and the garden farther on. No, you never would guess it to be a brook in a bed made by mortal hands, if I didn't tell you so.

It grows later, darker, stiller; very faint, very far away is the soft, tender call of the canyon bird—once again, then silence. I turn the corner and look down across the court to the brilliantly lighted veranda and wide balcony of the spacious office building. How like some scene in an opera, just before the entrance of the chorus—when the hush of expectancy holds the audience! It seems, yes, for all the world, like a perfect stage setting. Well, perhaps it is a stage—where men and women have, and men and women will enact no unimportant part of their life's drama—its romance perhaps. Certain it is, that the stage has witnessed much magic transformation. I have seen pale men, worn, haggard, dull-eyed and listless, come—make their entrance upon this stage—but I have seen none such as they depart. In their stead were men going back fit to take their places in the world. Men with the rugged glow of health on their sun-bronzed faces; the joy of well being brightening their eyes; a buoyancy of carriage and sprightliness of step, and a cheerful ring in their voices proclaiming them "made whole." It was the same with the host of frail, fretful looking women—nerve tired and world worn when they appeared, making their exit with every evidence of having bathed in and drank of the Fountain of Youth. They grew joyous as the birds that fill the air with the melody of their wild, sweet songs; birds, many of them so brilliant of plumage they seem like winged flowers. Yes, youth seemed to come with health back to the hearts of these men and women who were so tired when they came. So very tired, with all life's illusions dead in their breasts, one would think.

Such glorious hours as they have spent in the open, following trails on foot or on excellent mounts—hunting the abundant quail or playing tennis, clock golf or just "lazing" and dreaming and absorbing life—new life, life with hope in it and the strength to do, to achieve.

And the *secret* of the whole transformation lies in the crystal, clear pools of water, soft as down and strangely soothing to the senses—water that gushes hot from a caldron down, down, somewhere in the heart of earth, where is brewed this magic that banishes pain and quiets the feverish unrest of tired brains and brings peace unto the souls of the weary.

One may bath in the pools, and the wise ones do, or they may turn the faucet in their bath tubs and enjoy "the same thing" there, as far as the water is concerned, but they miss the charm that the mountains and sky and birds and the beauty of growing things imparts to those who choose to bath in the pools; and they miss the pleasure of going from one pool to another and of drinking the water as it flows out of the rocks. But it's all good, whichever way one chooses.

Almost every known kind of bath may be had here, including the vapor, Roman, electric and Schott Nauheim. The most skilled attendants are provided to administer to the guests and the roomy bathhouses, with their numerous, comfortable dressing rooms, shower baths and rest rooms, leave nothing for the most exacting to suggest in the way of added comfort.

So this is why I stay on—the last of many guests, and why I do not leave, at least, not until after the ever courteous management has repeated pathetically its several hints about the season having been, for some time, "over." However, the most effective reasoning comes with the announcement that on the morrow George takes the big, roomy automobile to the junction, and that George will not return until the season opens in the autumn. George is the big, broad shouldered, athletic, young chauffeur, he of the cool head, the steady nerve and strong hand.

It is only when George makes the last run of the season that I ever intend to break camp, pack, and leave paradise via one of the finest mountain roads in the country, if not in the world.

All along the road "away," glowing blooms of a countless variety of cacti adorn the sides of the wine-brown foothills. Far away there are mountains that distance veils in amethystine, mystery and majesty.

Giant cacti everywhere, like grim and forbidding sentinels, stand keeping ward and watch of the highway and the byways, of mountain fastness and desert expanse. Do you know the desert—the desert in all its beauty? If you do you love it, and you have acknowledged, with thousands of others, that the spell of it is like no other spell; it is the spell of a mystery that grows and deepens as it unfolds—and when the big automobile has brought you down out of the foothills and sweeps you over its breast, you feel the wild, sweet thrill of it—you feel it when you are "going back" and you feel it when you are "coming away."

George brings the car up to the Inn and I shake hands with him. He patiently, smilingly reassures me that he will be there to meet me on my return—for, as I have been telling you, I am "going back" to CASTLE HOT SPRINGS, ARIZONA.

Rural Home Life in the Salt River Valley

By Edith Evans

Not a man or woman but will be the better and cheerier for reading this brief homely, wholesome story, which, like the writer's sentiments, are brimful of womanly sweetness and that certain largeness of viewpoint that bespeaks an intimate knowledge of human nature.

"Be you goin' to town to-day, Ketury?"

"Land, Jeminy Ann, how kin I ever go anywheres? What with washin', ironin', churnin', bakin', makin' and mendin', seems like there's nothin' to do but work till I drop."

So has sighed and spoken the household drudge and burden-bearer, the farmer's wife, not only through state after state as American pioneers hewed their way westward, but even in prosperous sections near large cities.

The exigencies of an era of development called first for inventions to help man in his struggle for existence—problems of ploughing and reaping, problems of transportation and world markets, annihilation of distance, conquering the earth and the air. Man must be helped and the world's work go on, while woman could wait and endure until her long night was past, and with the dawn of a new day she came into her own.

Meanwhile, she has had to grow to a realization of her needs, to a consciousness that the remedy for her seeming wrongs lay within her grasp, and was to be obtained for the asking.

Nowhere has woman's sphere enlarged more fully than in our great and growing West. And what is true of the cities and towns will apply with equal force to the outlying rural districts in the Salt River Valley of Arizona, which are rapidly being peopled, not only with health seekers from every point of the compass, but with families who are wearied of the long inclement winters of the East, the drouths and cyclones, the fogs and dampness of other sections.

Men come here to investigate, become enthusiastic, and rarely return to their homes, except to bring back their families and household goods. The women come with some apprehension, fearing that the new conditions will work greater hardships for them. But sister woman, do not fear; come and see.

Fifteen years ago one needed courage, but not so to-day. Windmill and engine have superseded the old-fashioned well bucket, with a tired woman tugging at the rope. The modern kitchen here may be equipped with range and boiler, with sink and hot and cold water; the bathroom may be as up to date as purse will allow.

In a little while the completion of the great Roosevelt dam will furnish power by which country homes can be lighted by electricity, while lamps and candles will be relegated to the past. As I said, the woman may have these things for the asking. But she must ask.

The man demands mower and hayrack and stacker and every labor-saving invention which modern ingenuity can devise. Shall woman, his helpmeet, be content with less? Now, as always, woman's true sphere is the home. But her broadening vision recognizes, to-day, that drudgery need not make her a slave; in fact, that drudgery does not exist for the free spirit; and here, in the Salt River Valley, if anywhere in the wide world woman can be free.

Here the new woman puts her brain into her work, planning it with foresight and economy of time, labor and money, executing it with order and promptitude, then, at completion, laying it aside, devotes the hours saved from old methods to the pursuits nearest her heart.

For at least ten months in the year God's great out-of-doors calls her with a ceaseless, insistent cry. For six or eight months it calls her twenty-four hours in the day, and each hour has its own peculiar fascination.

In the dewless summer nights it is a wonderful thing to carry one's cot quite away from all enclosure and lie down under the stars. Nowhere are they so beautiful. The great planets burn overhead; the dipper swings around in its slow circle; one after another the zodiacal signs rise and set; the sweet influences of the Pleiades "are unbound and fall gently upon tired hearts." A mocking bird trills in the darkness, sweet odors fill the air, and presently the ravelled sleeve of care is knitted up in balmy sleep. It seems but a moment, when in some dim, mysterious chamber of the dawn a dove awakes and utters its pathetic note, the meadow lark's voice is heard, and presently a whole congregation of red-winged blackbirds whir upon the nearest tree, and begin their matins, singing praises for "Ar-i-zo'-na, Ar-i-zo'-na, Al-le-luia."

And so one rises to the day's work in accord with the song of all creation. Moving briskly around, occupied with dignified labor for the common good, one's eyes wander continually out over the green fields, down through the bloom-laden orchard lanes and as the soul rises out of the actual into the ideal, stray verses out of memory's sea come to the surface and warm the heart:

"The common round, the daily task
Will give us all we need to ask
Room to deny ourselves, a road
To lead us nearer unto God."

Do we thirst and drink, then we say with holy George Herbert:

"But as birds drink, and straight lift up their head,
So shall I sip, and think of better drink,
I shall attain to after I am dead."

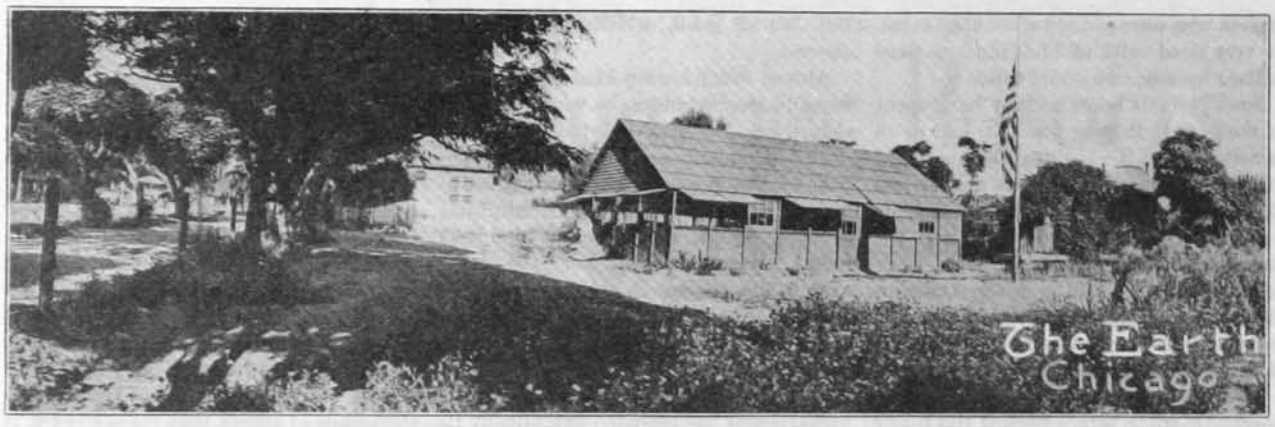
Do we pause midway in perplexity over some unaccustomed work

"A hard task and the muscle to achieve it,
A fierce noon and a well contented gloam."

And

"Who does his best shall have as a guest,
The Master of life and light."

(*Continued on page 42.*)



The Phœnix Garden Kindergarten

A Garden Kindergarten

By Lucy Terrill Ellis

A story that every parent should read and consider.

The thinking people of to-day are facing some mighty problems. The first and all important one is this—that health is handicapping progress; that physically we are not what we have been or what we should be to meet the requirements of a great people; that a mistake has been made somewhere; that tuberculosis is undermining the health of the poor and rich alike. To save the children who are to become the men and women of to-morrow we must go back to "Nature's way—hence this growing enthusiasm for children's gardens and playgrounds.

Flag Day, Phœnix Kindergarten

In the city of Phœnix, Salt River Valley, where the air is soft and velvety, where palm and pepper and pomegranate cast beautiful shadows in sunlight and moonlight, where stars seem brighter and closer than anywhere else in the world, where the water in song and rhythm rushes down through the canals, and every day is a play day and a happy day, you will find a garden kindergarten. The workshop is simply a portable building, perfectly sanitary, with a free circulation of air, which stands for health. The four sides can be lifted and the out-of-door freshness come in to the children.

The Master Teacher gave His most beautiful truths from the mountain's side, by the water's edge, through fields of corn and from flowers picked by the wayside. So in the garden the child finds that he grows as the flowers grow, for the analogy of plant life and child life is divine revelation.

The daily intercourse of the child with Nature, the out-of-door life, the filling of the lungs with pure air, little feet touching Mother Earth, little hands digging, planting, watering, pulling, watching the same unfolding in plant life that is within himself, is true education. In the Garden Kindergarten he is developing his three-fold nature through his activities.

In this Valley garden, where Arizonans of the Lilliput type are preparing for school days, one finds the old-time hospitality and generosity that is native to the rural life. The small stranger from the North and East and South and West finds the gate to the garden unlocked, and the door to the shop wide open. He at once becomes a member of the youngest and sweetest order of the true Brotherhood and a prophecy of the beauty of community life. In this garden he meets the youngest apostles of the city's civics, for the children have made an ugly, unkept corner a delight to their neighbors, a pleasure to tourists and a paradise for the babies of Phœnix. Should you ask these youngest citizens who they are, more eloquent than words their happy faces would answer back: We are Joy! Joy!! Joy!!!

Here one finds a splendid bureau of exchange, for the little tourist brings into Phœnix the atmosphere of the big cities of the outside world, and in return gets the wealth of health and a royal welcome to "Happy Corner, on Good Children's Street."

A thrill of gratitude comes with the knowledge that here one finds that the Garden Kindergarten is a part of the versatile and progressive growth of this wonderful Valley, for it has taken the initiative step in the world's right to prevent the spread of disease, by giving the young child exercise in the open, covering him with Arizona sunshine, filling him with Arizona ozone. He becomes a composite of the brown of the earth the gold of the sun, the silver of the moon, the blue of the bloom of the alfalfa, the green of the grass, and leaves. He breathes the breath of the air and in him is the music of the water, the breeze and the bird, the strength of the wind. The rock is his, for he has become the deposit of health, Nature's best gift to the children.

One of the Flowers

Rural Schools of the Salt River Valley

By Homer Davis

Schools maintained by an ample fund, situated in a climate where attendance is never interrupted by inclemency of the weather, and supported by people whose aim is to uplift and advance their children, can not be other than the best. This is a condition the homeseeker will find in the Salt River Valley.

The standard of our rural schools can best be told by telling something of the teachers upon whom the making of the system depends.

It is not unusual in many eastern states, to find pupils under the tutelage of persons whose training has not extended more than one or two years beyond the work in hand. In Arizona, this is practically impossible; in fact, one who has not completed a four-year high school course need not apply for certificate, as that is the least attainment that will be considered by the examiners. More than 75 per cent of our rural schools have teachers who hold state normal or state university diplomas. Why? Because the people of Arizona are always ready for the best. Money is not the whole consideration in securing teachers, but it goes a long way towards securing the best in any profession. The salaries are not high, but long before the states of the Middle West were awake to the fact that teachers were not paid enough, Arizona had realized the fact and had made provision for paying salaries that would secure the best that could be had. Teachers of wide experience with high ideals, coming from all sections of the United States, have set the standard of the rural school very much higher than most eastern teachers and patrons can realize.

Another factor in the uplifting of our standards is the fact that the pupils themselves have come from all sections of our country. It is a liberal education for some people just to be relieved of the provincialisms surrounding them. In a western school, children are brought into contact with new ideas and new life every day; whereas, many communities in our eastern states have been for years with the same families, the same ideals and possibly the same families of teachers until they forget that there is ever a chance for improvement.

Eight months is about the average term in this country. Eight months of sunshine and study will produce more results than nine months of snow, ice, and storms and the consequent irregularities, found in many of the best sections of the United States. Many times, pupils of the eastern states are necessarily shut in doors from the time school begins in the morning until they leave in the evening, which leads to unsanitary conditions in the room and consequent lack of effectiveness of the teacher's work. Compare this, if you please, with our conditions here. There are not three days in the term when the children cannot go out in the open air and enjoy the full relaxation for which intermissions were intended. Many teachers will appreciate this, for they know that when the dead of winter comes, it is accompanied with the trouble of discipline. Give the boy a chance to use his physical energy, give the girl a chance to grow physically as well as mentally, and our future will be more secure.

No one contemplating a move into the Salt River Valley need fear the dangers of irregularity, of inadequate equipment, of low standards commonly found in new communities. On the other hand, he may find that his ideas of school necessities may be broadened until he becomes a part is of the great enthusiastic West, which is doing so much to advance civilization.

Children of delicate temperaments are enabled to carry a full course of school work here, as no part of their energy is required to resist the rigors of an unfavorable climate. A course of study is consistently followed. The schools of the Territory are so organized that a higher education is the most natural step for the young man and woman and is not considered impossible by anyone.

We want people in Salt River Valley who take an interest in schools. We want them to make careful inquiry into our school system. It is this class of people who have enabled us to reach our present standard and who will enable us to keep abreast with the times.

I would not give a farthing for a man's religion if his dog and cat were not the better for it.—*Rowland Hill.*

God's love for poor sinners is very wonderful, but God's patience with ill-natured saints is a deeper mystery.

Much of the charity that begins at home is too feeble to get out of doors.

Typical District Schools of the Salt River Valley of Arizona

A Woman Who Knows *and* Does

By Mrs. Eugene O'Neill

An article that all homeseekers should read. The facts and figures are carefully given by a woman who knows and who does.

Having lived in an irrigated country for ten years and in Arizona for twice that period, I have gotten so accustomed to the condition of affairs as regards climate, productiveness, etc., that I imagine every one is familiar with them. But for the benefit of some of my sisters in other climes, where snow abounds and the winter still hangs on in April and May, I shall try to give a little account of the conditions as they exist in and around Phœnix, the garden spot of Arizona and the center of the irrigated district.

The canals of this Valley supply the farmer with water to irrigate his crops. The water is turned into the different canals for a certain number of days, and each land owner is apportioned his share according to his acreage. The alfalfa fields and grain lands are laid out with drills or borders lengthwise, and the water at the head of the land is dammed up until each strip, or "land" as it is called, is wet to the end, when it is turned on to the next "land." There is just enough of fall to this Valley to carry the water over it in a slightly down-hill direction. As there is no rainfall in this country, we depend entirely on irrigation, and so are assured a certainty of crops, year in and out. The first hay crop on our place is usually cut on or about April 10, and the sixth or seventh crop is cut on the last of October. Where a good stand of alfalfa is once started, there can be no failure, if it is properly irrigated.

We keep our cattle on alfalfa all the year around. Our milk cows are never housed and sleep in the open even when we have rain, with no bad effects. We feed alfalfa, and only that, both green and dry. Our cows do not know what bran is, and refuse to eat it. The alfalfa is the best butter producer known, the cows giving rich milk, and on account of the mild climate holding on to the milk supply longer than in any other region. We have three heifers, who are fresh this year, that give four, and one, five gallons of milk a day, that are only twenty months old. The average butter yield from them is a pound of butter per day.

Our horses keep in fine condition on the same feed. The driving and riding horses have coats of satin, and yet they receive no oats at all, and in winter about a pint of rolled barley twice a day. The horses that do the heavy work are never fed grain, and yet are able to do any and all kinds of work. The hay is stacked out of doors and keeps sweet the year around without any covering.

While we keep our mares and colts under cover in an open shed during the winter months, the majority of people do not—they simply turn them out into the fields, and they thrive just as well.

Our orchard is a mass of bloom and fragrance in February, and in May we gather the first apricots and the first figs, while the strawberries are in the market from December on, until late in May. The fig trees yield two crops and sometimes three—large, luscious fruit that is sweet and wholesome.

Sweet Pea Seeds Fell Among the Grain, Salt River Valley

The seedless Thompson grape is a prolific bearer here, and is ready to pick July 1.

The plums, pears, peaches follow in in quick succession, and in November we gather the russet and Kiefer pears for winter use.

We have no orange, lemon or grape fruit on our place, but some of our neighbors have oranges that bear very heavily. The date of commerce grows to perfection in this Valley.

All kinds of poultry do just as well here as the stock. The chickens are housed in sheds with screen fronts to them, as it never gets cold enough to necessitate tight board houses. We feed our poultry wheat once a day and bran in the morning, and then allow them to run at large for half a day on alfalfa, and they certainly thrive. There are no diseases among the poultry here, probably because we do not have to coop them up so closely. Eggs sell here as high as 50 cents during the winter months, and now, in April, we are getting 22½ cents for them, while spring chickens sell for 25 cents per pound, broilers and fryers weighing two pounds a piece.

Last year I raised sixty turkeys that I sold for 18 cents per pound, and some of them weighed twenty pounds—all less than eight months old, while at Christmas time the markets were ready to buy at any price if they could only get the birds.

The profits from our orchard of two acres was $189 for the season, exclusive of the fruit that we gave away to friends and that we used for ourselves.

We have twenty acres in our ranch. Of this two acres is taken up with house and sheds, two acres in orchard and the rest in alfalfa, and last year we kept forty head of horses, cows and calves on the place, and our profits amounted to $650 clear in cash, besides the supplies furnished our table. Aside from the prolific yield, the climate for the homeseeker is perfectly delightful. From September until June the weather cannot be surpassed anywhere.

We sleep out of doors for six months of the year, while there are many who sleep out doors all the year around. There is no dew or dampness here at night, and the air is delightful. During the winter months we have a fire in the mornings, but during the day the sun is so warm that no fires are required.

It is a fact that we never have an umbrella in the house, for they wear out from disuse.

Then for the lover of roses this is a paradise. They bloom constantly, and the American Beauty is the finest of them all. We have roses at Christmas and again at Easter and Thanksgiving—and yet the bushes are covered with buds at all seasons. Our public parks are things of beauty and a joy forever, as all kinds of flowers are raised there, but the busy farmer usually has a couple of dozen rose-bushes, and he is kept supplied with flowers all the year around. Why should we trouble with other plants when roses do so well?

The months of July and August are very hot. Yet the heat, as great as it is, does not produce sunstroke or heat prostration. The farm hands as well as the horses work all day in the hay fields without any ill effects.

Is Salt River Salt?

By Joseph H. McClintock

The often-put question answered.

"Is Salt River salt?" That is a question fired continually at any man whose business it may be to give information concerning the Salt River Valley of Arizona. One man wrote the secretary of the Phœnix Board of Trade, asking if the water were nearly as salt as that of the ocean and whether it would kill vegetation. Another suggested that shrubs which grow along the eastern coast, where the spray of the surf dashes over them, surely would be suitable for planting in a land watered by Salt River.

It really is a pity that Salt River has such a name and that this greatest of valleys has to be known by the same title. Yet by that name they *are* known and under it will they yet be appreciated at their fullest and most wonderful worth. Maybe the name yet will be in itself an asset, something like the heat of Arizona's unjustly maligned summer climate.

When the first Spanish explorers passed down the Gila River, they encountered, near the Pima villages, a large stream flowing in from the northward—even a larger river than that whose course they were following. This new river they named the "Asuncion," probably having discovered it on Ascension Day. I have seen it noted also as "El Rio de la Concepcion." You may not know that the

(Continued on page 41.)

Hunting *and* Fishing *in* Arizona

By LeRoi C. Snow

This article will be of interest to sportsmen throughout the United States.

In our eastern cities the heat during the summer months is greatly intensified by the reflection of the sun upon hard, white, asphalt pavements and the bright glare makes dark glasses almost necessary. We feel confined almost to suffocation in the small city offices and poorly ventilated shops, banks and stores. We hear the continual buzz and hum of the electric fan as it stirs up the hot air and we endeavor to deceive ourselves with the belief that life under such conditions is pleasant.

Is it any wonder that we should be filled with a natural longing and hunger to get out into the mountains where we can be fanned by Nature's life-giving breath as it comes purified from pines and thicket, perfumed by numberless wild flowers, and cooled by icy-cold, crystal streams?

I was filled by such a desire a year ago. While I was preparing to visit the familiar hunting and fishing grounds near Jackson's Hole on the border of Yellowstone Park or in British Columbia, a friend suggested that I go to Arizona. "Arizona," I replied in astonishment, "would you have me hunt and fish on a parched desert?" Then he told me of the White Mountains, White River, Paradise Creek, Black Creek, and many other sparkling, mountain streams hidden away in the largest pine forest in the United States.

I changed my plans and about two weeks later my camping, hunting and fishing outfits were thrown out of the baggage car when the Santa Fe train stopped at the little station at Holbrook, Arizona, on the main line between Albuquerque and Los Angeles. From here the journey is completed by team, regular stage line, or horse back twenty-eight miles to Snowflake and about the same distance on to Showlow and Lakeside, where the great pine forest is entered. From this point it is about twenty miles to the White River, during which time one can seldom see more than a few hundred yards because of the dense growth of stately pines towering hundreds of feet high.

This country is so far from the well beaten paths of the multitude of sportsmen that it is certainly ideal for those who are seeking new and greener fields. The altitude is about 8,000 feet with mountains reaching many thousands of feet higher. The nights in July and August are cool enough, occasionally, to freeze a very thin sheet of ice and the crystal streams are icy cold all day long.

There is no finer, cleaner, or sweeter meat in all the world than the beautiful, sparkling mountain trout caught in the White River. They are not very large, the average being from six to twelve inches long, but I know of no other streams where they are more numerous. I used fly and spoon hooks entirely and did not bait the hook a single time during the whole trip. I never fished more than a few hours at a time and several days, while hunting did not fish at all, but during the three weeks' trip I caught nearly 900 of the speckled beauties, catching ninety-two one trip. Nearly 2,000 were caught by four of us during this time. I never expect to enjoy better trout fishing.

On Reevis Creek, Fifty Miles From Mesa

But the hunting is even better, if possible. I have participated in the famous "fox chase" in several parts in of Europe, but never with the genuine interest or excitement of the wild coyote chase over the rolling ranges and ridges in Arizona. These speedy animals are so very numerous that one can pursue this sport until fully satisfied. Then there are the large grey wolf and the still larger white wolf or lobo, which require greater care in hunting.

I do not know of any section where there are more antelope than on the prairies of north central Arizona and, as we go farther back into the forest, deer can be found any season of the year in the open senecas. Smaller game, such as coon and the large grey squirrel are quite common, but the greatest sport of all is hunting our great American native game bird, the wild turkey. One day, only a few weeks ago, I rode into four flocks within an hour. There were from twenty to thirty in each flock.

But if this small game is not exciting enough, there is ample opportunity to keep the big game hunter busy. The wild cat, badger, mountain lion, cougar, and bear are so numerous that they cause considerable loss every year among the sheep which graze within the forest. Some trappers are kept busy continually killing these dangerous animals, simply for the protection of cattle and sheep.

While we were on White River, two other camps were near us and during the three weeks our three camps killed seven bears, the largest, a cinnamon, weighed over 600 pounds and the smallest, a black bear, weighed over 200 pounds.

Arizona, in my mind, has changed from a hot, sandy, desert into an ideal retreat for the sportsman who is fond of fishing, hunting and camping.

Chicago, June, 1909.

Tent Life *in the* Salt River Valley

By Dr. Frederick A. Stafford

Better to hunt in fields for health than fee the doctor for a nauseous draught.—*Dryden.*

One who has not experienced the delights of sleeping out-of-doors under the starlit canopy of an Arizona night, does not know what he has missed. It is an accepted fact that thousands of afflicted beings are each year restored to health through the magic influence of an out-of-door life of sunshine and pure air. If such wonders can be wrought in the restoration of the sick to health, think of the incalculable benefits that must accrue to those who are not appreciably ill. All authorities agree in a demand for the simple life in the treatment of incipient pulmonary troubles. Nowhere can the most exacting demands of such a life be more accurately fulfilled than in Arizona, and nowhere in Arizona with greater perfection of detail than in the Salt River Valley, on the edge of the desert. The term "desert" is apt to convey an idea of vast wastes of dreary sand, a pitiless sun, here and there a lonely palm, and bleaching bones of travelers, bearing silent witness. The Arizona desert is none of this. Even in the dry season, it has its mesquite and creosote bushes which are always green, as is also the *poloverde* (green-stick), named by the Spaniards. The germ of life is always here, and when a rain comes, the desert flowers spring up. A soft covering of grass appears, and everywhere is new beauty. Here the sun shines almost continuously; the days are warm and glorious, the nights are never too cold for sleeping out-of-doors; here we have a great fertile valley to provide all the food requirements for the most fastidious appetites; here is the ideal spot for living the simple life. In no way can the simple life be more fully realized than by living in a tent house. By this we do not mean the inadequate tent of our back East camping days, but a well constructed one with a tight floor. It should have preferably two rooms, one a sleeping room, screened to the floor, and with adjustable flies or side walls of canvas, which may be raised as awnings or buttoned down for protection during one of our infrequent rains; the other with side walls wainscoted half their height, with the other half screened and protected by canvas awnings, that can be raised or lowered, or even rolled up, as occasion demands. The two rooms may be separated by a partition and connecting door, and it is convenient to have an outside door to each room. It is possible to enjoy tent life with even less perfect accommodation, but with a tent constructed after this manner the enjoyment may be perfect. On a winter's day, when the warmth of the sun has dispelled the chill that comes with night, you open all the walls of your house; when the day is done, and the glorious sunset colors have faded from the sky, you close the living-room; a cheerful fire is started in the stove, and then what could be more snug or cozy than an evening amid such comfortable surroundings? The flies on the sleeping room are rarely closed at all, so when bedtime comes, you have but to step into this open room, revel in sleeping out of doors, and feel secure in the thought that all night long you will be traveling on the surest and savest road to health.

Many who come West for their health, fail to reap the benefits they might have had from their stay, because of their mistake in clinging close to the cities, instead of going at once to the open country, and thus avoiding the impure, dust-laden air of even the cleanest city. If one is alone and sick, then he must ally himself with some public institution or tent community, where food, service, etc., are provided, since it would be impracticable for him to go Arab-like and pitch his tent on the desert, when the chief ingredient in his prescription is rest. But when the one whose health is to be restored is surrounded by able friends, then it is possible for him to build his own tent and live the simple life, according to his own ideas. Of course, one must keep in touch with a good water supply, but this is made possible by camping near one of the numerous irrigation canals, which, with their banks bordered by stately cottonwoods, are quite as picturesque as the country stream you knew at home. Delicious milk and cream, eggs and butter are usually easy of access, and the Chinese vegetable man brings fresh vegetables to your very door. The best cuts of meat are always to be had at the excellent city markets—and delightful grape fruit and oranges are grown on a neighboring ranch. Here then, are the raw materials for constructing such a diet as will be most in accord with the simple life.

After even a little time spent thus in this land of sunshine, where the average daily winter temperature is from 70 to 80 degrees, where the nights are cool and invigorating, and where the rainfall varies from five inches in the driest years, to ten or twelve in those of heaviest rain, there dawns upon one, with the first ebb of returning health and vigor, a realization of the blessed privilege of living in the open

Here one may bask in the sunshine by day, and by night enjoy the beauties of a

cloudless sky, and the moonlight which is unusually bright, and the stars which seem unnaturally large and near.

But while the desert is brimming over with health, it must not be misconstrued to represent an infallible remedy for all conditions. It is lamentable that physicians are continually sending to this country, to regain their health, patients in so advanced a stage of illness that there is no possible hope for them. However, where the conditions are favorable, improvement often seems nothing short of magical. Each morning one awakens with a feeling of added strength and a clear mind, such as one never has after sleeping in the bad air of an ordinarily ventilated bed room, For what comparison is there between sleeping within four solid walls—even with many open windows—and the wholesomeness of sleeping in the open? After a few months of this charming life, the idea of ever again reverting to the established custom of sleeping indoors seems not only distasteful, but absolutely impossible. So widespread has this feeling become, that no matter what city or part of the country one visits, one can see the growing tendency of people to devise some way of sleeping out-of-doors, in screened porches, etc., for while city air does not compare with desert air, outdoors is always better than indoors.

Your friends in the East will ask, "Don't you ever get lonesome?" and the answer is "No." This is especially so if one can afford to keep a horse for driving or riding. The weather seldom interferes with any excursion you may plan, so it is possible to visit Camelback Mountain with a picnic basket, or to drive or walk to the nearby buttes. Then one may visit points of interest in the Valley—the Indian school, the Indian Reservation, the ostrich farm, orange groves, etc. All day long you are enchanted by the songs of mocking birds and meadow larks; you see quail, rabbits and chaparral-cocks loitering about your tent, willing to associate with you on terms of perfect friendship if you will only show the proper spirit—thus there is plenty of wholesome entertainment for those with even an average amount of resourcefulness.

These delightful conditions prevail for nine or ten months in the year. It is possible to live in a tent even during the summer months but the heat makes it less enjoyable than during the rest of the year. Desert, Inn, April, 1909.

Tent Home Near Desert Inn, Salt River Valley

Phoenix Water Department

By B. A. Craig

Very few eastern cities can lay claim to a water works system equal to that of Phœnix, Arizona.

The water department of the city of Phœnix began its existence in June of 1907. Previous to that time the waterworks system was owned and operated by a private corporation, known as the Phœnix Water Company. The growth of the city in the past ten years, however, was so great that the plant of the Phœnix Water Company became insufficient for the needs of the city, either for domestic service or for fire protection, and in order to relieve the situation, it was deemed advisable for the municipality to acquire its own system. The entire plant of the Phœnix Water Company was purchased and immediate steps taken to provide an efficient water supply.

During the winter and spring of 1908-9, $150,000 was expended on the installation of new pipe lines, fire hydrants and other improvements. In addition to about five miles of cast-iron pipe in the system at the time of the purchase, there was installed during the period mentioned one and one-half miles of sixteen-inch cast-iron mains, one-quarter mile of twelve-inch, two and one-half miles of ten-inch, two miles of eight-inch, fourteen miles of six-inch, and two miles of four-inch mains, all of the highest grade of cast-iron pipe obtainable.

To the fifty-seven fire hydrants then in use, and comprising the entire system of fire protection, were added 113 Matthews hydrants of the latest pattern, giving the city adequate fire protection throughout its limits. Within the last year some $9,000 has been expended in further extending and improving the system, and provision has been made for expending the sum of $10,000 each year out of the earnings of the department for further improvemets and extensions.

The pumping station, until the present time, has had a capacity of 4,000,000 gallons in twenty-four hours, but recently a contract has been awarded to a prominent steam pump company of Milwaukee for a cross-compound, high-duty, Corliss pumping engine of 3,000,000 gallons daily capacity, which will give the station a daily capacity of 7,000,000 gallons.

The pressure for domestic service is maintained at forty-three pounds and is regulated by a 100-foot stand pipe located at the pumping station. For fire pressure the Holly system is used and a pressure of 100 pounds per square inch maintained. The change from domestic to fire pressure is a matter of about two minutes. With such a fire pressure available at all times in the mains, a steam fire engine is not needed. Nevertheless, as an extra precaution, the fire department is equipped with two steam fire engines and two chemical engines of the latest design.

From the start the water department has been entirely self-supporting, and no money is drawn from the general fund to pay either for interest on the waterworks bonds, for improvements or for the maintenance of the system. During the first year of operation the department showed a surplus of over $27,000 over all operating expenses, and recently the rates charged for water service have been cut one-third.

The city council has shown a disposition to eliminate politics entirely from the management of the waterworks and to bend all their energies to improving and bettering the service in every way possible, and at the same time to diminish the cost to the consumer. As a result of their efforts, Phœnix probably has the best system of water service in Arizona, both as regards domestic service and fire protection, and is equipped with a waterworks system that is capable of being expanded to keep pace with the growth of the city for the next fifty years.

In a Vineyard Near Mesa

The Tempe Normal School

By Professor R. M. George

The Salt River Valley is justly proud of its Territorial Normal School.

It has been the policy of the Normal to take students from the widely scattered public schools, give them a year of vigorous work in bringing up to academic standing, then two years academic work, followed by two years of professional training or of higher academic study. This rigid holding to a five-year course has produced unquestionable results. Everywhere, throughout the territory and in neighboring states, the Tempe Normal School diploma is accepted as a first grade teacher's certificate, while the academic credits admit to Leland Stanford, Cornell and other universities where the credit system is in vogue.

With such standards thoroughly established, the Normal School at Tempe has long been destined to be a big factor in the future of the Southwest; with the change in educational conditions throughout the territory in recent years, this institution has come into its own. Here is a school any community would be proud of. Recent legislatures have been generous in providing funds and the equipment has been liberally increased. On a beautiful campus of twenty acres, stand eight well appointed modern buildings, sanitary and comfortable. The dormitories afford quarters such as few schools, east or west, can offer; and the library and athletic fields are right at hand. Taking into account the unexcelled climate, it is hard to imagine a place where a student can work to better advantage.

To homeseekers, the education of the family comes as a question of vast importance. Here is the solution offered by the Tempe Normal: The Training Department for children in the grades; the Normal proper, for students who have passed the eighth grade; and, for high school graduates, the professional course.

Teachers are well paid in Arizona. The average teacher's salary paid to men last year was $99.50 a month; and, in his report this year, the superintendent of public instruction makes a special plea for more resident teachers. The graduates of the Arizona normals are peculiarly fitted to deal with Arizona's educational problems, and are given the best schools in the Territory. The Normal at Tempe offers the peculiar advantages of a well established school in a country just fairly beginning to be developed. There

(*Continued on page 45.*)

Mesa's Lands and Industries

By L. R. DeVoigne

The writer of this article might have said more wi hout fear of over drawing his picture of the beautiful Mesa country, a rapidly developing section of the Salt River Valley.

The Mesa district, although only a small part of the great Salt Lake Valley of Arizona, is called the garden spot of the world by all who see it. The Mesa district has two irrigation canals which furnish water for over forty thousand acres, of which a large portion is now a moving sea of alfalfa and grain.

The well improved land of this district is valued at from $125 to $200 per acre, water rights included. There is a new canal now under construction for the Mesa district that, when completed, will water an area of 16,000 acres. This land, being of a loose sandy loam, is beyond a doubt the best orange land of the United States. The value of this land is not so high as the older well improved district, and is now selling from $65 to $100 per acre, but this condition will soon change, for as soon as the new ditch is completed there will be sufficient water to make the whole one vast garden. For raising such fruit as oranges, lemons, peaches, apricots and grapes it is the best country, baring none. As the experimental stage is long past, there are large orange groves in the district that have been bearing for the past six years. The crop of one of these last year brought its owner $3 net per box. D. E. Reed, formerly of Colorado, is the proud owner of one of these groves, and harvested a crop of 1,800 boxes from ten acres. W. K. Bowen, another fruit grower of the Valley, would be very glad to inform anyone who would take the trouble to ask him of the advantages of this country, and is thoroughly posted in the business, as his former home was in Florida.

One of the greatest paying crops here is alfalfa; if properly watered there is six cuttings a year, with a yield of one and a half tons per acre each cutting, and the Valley being in the center of a great mining district, there is a big demand for hay at all times, and there is always a ready market at $10 per ton. Another paying industry of the country is dairying, as there are green pastures all the year, and there is no shortage of milk caused by dry winter feeding. Allison Brothers are leaders in this line in this vicinity, and any farmer who will take the trouble to keep a half dozen cows and deliver the milk to the creamery, will find himself $75 richer each month. In fact, ranching of any kind pays 50 per cent on investments. If the reader has any doubt of this he will be convinced if he will acquaint himself with J. E. Taylor, who has recently sold his ranch for $80,000. He started ranching here eleven years ago with a few hundred dollars.

One of the growing industries of the Valley is ostrich raising, and it is found to be a success. One-half mile from the city of Mesa, there is to be seen a farm stalked with 200 beautiful birds, valued at $300 and $500 each. The increase of these birds is about twenty to each pair per year. Dr. Chandler, one of the old settlers of this country, is the owner of this farm.

We can judge a country's prosperity somewhat by its banks. Mesa, a town of 2,000 people, has two banks with a capital of $35,000 each. The Salt River Valley Bank, lately established, was organized by Kansas City banking people, who find it more profitable to do business here than there, a fact which is certainly no discredit to this country.

Mesa's Climate and Water

By Dr. R. F. Palmer

The climate of Mesa and the surrounding country, and the water supply, are discussed in the following article from the standpoint of a physician.

The climate of Mesa and the surrounding country is that of the Salt River Valley in general, with the added advantage that Mesa is at the head of the Valley and consequently a little higher in altitude and just a little cooler in the summers than the sections lower down the river.

Nine, out of every ten residents, if asked to name the two greatest assets of the Salt River Valley, would, without hesitation, reply, the climate and the soil. And it is true we have the most ideal climate to be found upon the earth, and soil which in productiveness is not surpassed anywhere. To be sure there are good climates outside of this Valley and there are many rich soils in other parts of the world, but nowhere will you find the two in such combination as Nature has provided in the Salt River Valley. The rich soil would grow crops in any climate, but in this particular climate it will grow crops which are unattainable elsewhere. On the other hand the marvelous climate of this region would lose much of its value to the human economy, were it not for the porosity of the soil which quickly absorbs rainfall and gives an efficient subsoil drainage.

In addition to the advantages of our climate in the raising of crops, it has proved to be of the utmost value in restoring health to many thousands of people who have come here seeking its advantages. The various educational campaigns on the prevention and cure of tuberculosis of the past quarter of a century have made the world cognizant of the peculiar climatic advantages of the great Southwest, in the treatment of these conditions. Fresh and pure air, day and night the year round, is the great aim to be attained, and in the Salt River Valley the climate is such that it is not only possible, but it is actually a pleasure to sleep in the open air every month in the year. With a maximum of sunshine and a very small relative humidity, the atmosphere is high in ozone and is practically free from organic impurities, and it is because of these things that so many people with tubercular conditions have come here in search of health and have found what they were seeking.

Much has been said about the terrible heat of our summers, and for an outsider to come here in August and actually see the thermometer register 110 in the shade day after day, it is not to be wondered at, if he concludes it must be hot and an impossible place in which to live. But the point is, if he had not seen the thermometer, would he have really considered it so very hot? His opinion is but a relative one and because in other localities where he has been, he knows that such a temperature would be unbearable; he assumes that mortal man cannot stand the heat here. But he is very wrong, because the effect of heat on the body depends entirely on the relative humidity of the atmosphere. It is the extremely low relative humidity of the atmosphere of the Salt River Valley that makes it possible to be up and doing on the hottest days and permits refreshing sleep on the hottest nights.

I, myself, have crossed the desert with the thermometer registering 115 in the shade and without any discomfort or ill feeling. It is simply a question of drink more water and sweat it out, and in profuse perspiration is our safety and our comfort. With the low humidity, the evaporation from the surface of the body is extremely rapid, so that perspiration not only cools the surface of the body, but does it without any discomfort. In our hottest summer months, sunstroke and heat exhaustion are practically unknown. The summer diarrhœas of infants, a condition most dreaded by mothers and physicians elsewhere during the summer months, are so rare that the older physicians have almost forgotten that these are the danger months for babies in their first two years of life.

Wonderful as this climate is in its health-restoring properties, and much as I would like to have every sufferer from tuberculosis have the benefit of it, I feel that I must add a word of caution to those of my readers who are tubercular and who contemplate a trip to Arizona for this purpose. It is this: In the very beginning of tubercular infections, in its most incipient stages, the climate of the Salt River Valley will restore you to health and vigor. Come and breathe our air in its pure and unadulterated outdoor condition. The Valley and its people welcome you and you will find what you seek.

A little later in the disease, when there is an afternoon rise of temperature, a frequent cough with expectoration, and perhaps night sweats, you may come with considerable hope that the climate, combined with a proper mode of living and eating, will restore you to health.

In the later stages of tuberculosis, when emaciation is pronounced and the strength is falling, climate can only be one aid among many in the body's fight against disease. If you are so situated as to have sufficient means to command every comfort and requisite needed by a sick person in strange lands, the climate will be of great help to you in your struggle. On the other hand to come out here alone, away from your relatives and friends, unable to work and unable to obtain the treatment and conditions so necessary at this time, you will make a sad mistake. The climate alone will not help you now, without proper rest, good food and careful nursing.

MESA'S WATER.

The health of a community depends in great part upon its water supply. Next to air, water is the most important of all substances necessary to human life. While it has been demonstrated that man may do without food for a considerable length of time, he can probably not survive much more than ten days without water. It is not only necessary to have a plentiful supply of a good potable water for drinking purposes, but enough is also needed to maintain cleanliness of bodies, clothing and dwellings.

In the Salt River Valley our water needs are peculiar and similar to those of other irrigated districts, in that we must have water for the soil in addition to that needed for domestic and town uses. For the irrigation water it is only necessary for me to say that it is derived from the Salt River through a system of canals and these with the great Roosevelt dam will be fully described in other and lengthier communications. This water is wholly a surface water and the Salt River, being a torrential stream, is frequently muddy and is not a first-class drinking water.

Our domestic water supply, therefore,

Country Road Near Mesa

must be derived from some source other than the river; and of the other available sources, rain water, sub-soil or ground water, and deep well water, we can only consider the two latter, as our rainfall is entirely too uncertain a quantity to be depended upon.

As in the beginning of all small communities, in similar localities, Mesa has in the past been dependent on the family surface well, with its bucket, or in the more pretentious homes and businesses, its windmill or power pump and tank. These wells have of necessity tapped the subsoil or ground water only, and while good in quality and sufficient in quantity, is constantly open to the danger of infection with disease germs, with all the disastrous consequences of such a contamination. Realizing the constantly increasing danger of such conditions in a rapidly growing community, the citizens of Mesa, some months ago, voted bonds for the sum of $50,000 for the construction of a water system which would give the town a pure and wholesome domestic water supply. The completion of this water system marks one of the most important advances in the progress of Mesa, and its inauguration was fittingly commemorated by a rousing celebration held the Fourth of July of this year.

The source of water supply for this system is from a drilled sixteen-inch well, 140 feet in depth. The casing penetrates and impermeable cement strata which effectually shuts off all surface water and gives a supply of water sufficient for a town of 10,000 inhabitants and one which cannot by any chance become contaminated.

The water is pumped into a huge tank, the base of which is 100 feet above the ground, and thence is conducted to the city mains. Pipes have been laid so that a main reaches within half a block of every house in Mesa, so that every building in the town can get city water, and every building is well protected in case of fire.

The water, in addition to being free from organic contamination, is most potable in character, and what little hardness there is in it is entirely temporary hardness and disappears on boiling.

Mesa is justly proud of her water supply and, with the climatic advantages provided by Dame Nature, feels that she is providing her citizens and the strangers within her gates as healthful a place as can be found upon the earth.

Irrigating Ditch Near Mesa

Letters from Prosperous Salt River Valley Farmers

We sincerely regret that lack of space compelled us to hold over a number of very interesting letters for a later issue.

Cantaloupes in the Salt River Valley.

Editor of The Earth:

I have grown cantaloupes for the last ten years near Mesa, Arizona, and have been quite successful. I am one of the oldest growers in the Valley.

My first experience in growing cantaloupes was in 1900. I had a small patch of two acres which went 150 crates per acre, which netted $1.10 per crate. That year we shipped to a commissioner in Chicago through the Phœnix Melon Growers Association. The next year, 1901, as we were not satisfied with the 10 per cent commission we paid, we dealt with a new commissioner who had not had any experience in handling cantaloupes. When they arrived in Chicago he had no market and consequently had to sell them at auction. Hence this only netted the growers 35 cents per crate. This discouraged the people in Phœnix and the Melon Growers Association quit business.

The next year, 1902, we organized what is now the Mesa Melon Growers Association. The people were somewhat discouraged that year. I went all over the country and canvassed it thoroughly and could only get about eighty acres signed up. That year cantaloupes netted the growers $1.22 per standard crate and 84 cents per crate for ponies. I had in four acres that year which went over 250 crates per acre.

The next year, 1903, I had in eight acres with partner and it went 186 crates per acre which netted $1.68 per crate.

The next year, 1904, I had in thirty acres with partner. We shipped 7,765 crates east and 1,400 to local markets, which netted 72 cents standard crates and 48 cents for ponies.

This crop of melons was grown one mile below Mesa under a pumping plant and it beat the world's record. We paid $35 per acre land rent and made a handsome profit.

The year 1905, I had in eight acres of cantaloupes which went 208 crates per acre and netted me $2.68 standard and $1.80 for ponies and jumbos.

The year 1906 I had in ten acres of cantaloupes which made 3,469 crates and netted 76 cents for standards and 46 cents for ponies and jumbos.

The year 1907 I had fifteen acres of cantaloupes which went 160 crates per acre which netted $1.40 and 86 cents for ponies and jumbos.

I have in twenty-five acres this year joining Mesa on the north and will invite any one who is interested in the growing of melons to come and see my patch which is all up and looking fine.

Geo. W. Radell.

Mesa, Arizona.

Sugar-Beets.

Editor of The Earth:

Growing sugar-beets is a new industry in this part of the Salt River Valley, but it is proving a success. I want to say just a few words regarding my experience in growing sugar-beets, in hope that they may be useful to others who may decide to engage in the industry here. I prepare my ground in September by plowing, subsoiling and thoroughly pulverizing it. In October, I plant in rows twenty inches apart, placing the seed about one and one-half inches deep. When the plants are up, I thin to about twelve inches apart. I thoroughly cultivate and always keep the ground level. I am careful not to use too much water as they do not require a great amount.

I plant my beets among the orange trees as I find they will grow there as well as anywhere. Three years ago I had in ten acres that produced a good crop. At that time I did not plant until January, when the seed should have been put in the ground in October. I harvested the crop in May and secured an average of twelve tons to the acre. It was my first experience, and growing beets is like growing babies, it requires experience.

This year my beets will do a great deal better, and I am certain of from twenty to thirty tons per acre.

My own experience, and that of others I have questioned, is that the cost of raising the beets and placing them on the cars will average about $30 per acre. Under even very ordinary conditions, the crop should net the grower $65 per acre.

My beets were planted in a young orange orchard, and this orchard is now bearing. The beets have paid the expenses of cultivating and general care of the orange trees, and what I will realize from the sale of the fruit will all be clear money.

With a factory only a few miles distant, there is no reason why beets should not be one of the best crops one can grow here. Parties desiring to engage in fruit culture will find beet growing a great aid while the young trees are maturing.

M. C. Phelps.

Mesa, Arizona.

Mesa's Schools.

Editor of The Earth:

Mesa's school system is the pride of the great Salt River Valley. This has been the foremost thought of every Mesa citizen, and the schools to-day bespeak their untiring work and zeal in the educational line. The history of Mesa's schools is the history of Mesa itself, and interwoven through it all is the name of John D. Loper, who has been the principal mover and builder of Mesa's present fine school system. Thirteen years ago, when Professor Loper first came to Mesa, there was one school building, where five teachers instructed 180 pupils, from the primary to the seventh grade. For the next two years Professor Loper was one of the five teachers. Then he was made superintendent of the Mesa public schools, a position he has held for the past eleven years. Too much cannot be said of his untiring work for the schools. To-day there are employed eighteen teachers, who instruct over 750 pupils in three buildings, with eight grades in the grammar school and a four-year high school course that is accredited by the University of Arizona at Tucson. Graduates of the Mesa High School are given a diploma for teaching with a two years' course at the Tempe Normal School. This, as will be seen, is a very marked advancement from the conditions here a few years ago.

Everything that a modern high school would require can be found in the new Mesa Union High School Building, which has just been completed at a cost of $48,500. This union high school district was formed in 1908, by the surrounding districts, and the taxpayers bonded themselves for the erection of this fine building, which is the pride of the Territory. The erection was commenced in July, 1908, and the building was dedicated February 22, 1909, by Governor Joseph H. Kibbey. It is the best arranged and finest equipped high school building west of Chicago. There are twenty-five recitation and office rooms, well equipped for doing all kinds and classes of high school work. The building is equipped with the Frick Program Clock System, including telephone service throughout.

This school building has a ventilating system. It has a complete heating and cooling system installed, so that the building can always be kept in a moderate and even temperature. The building occupies a five-acre tract, and has fine athletic grounds, as well as a fine gymnasium. In fact, every convenience that is required will be found in the Mesa Union High School Building.

To the homeseeker, the school question is one of importance, and he will find in Mesa one of the finest and best school systems in the United States. Nowhere in the West or Southwest will be found better educational advantages than in Mesa, the "gem city" of the Salt River Valley."

W. Aird Macdonald.

Mesa, Arizona.

On Fifteen Acres.

Editor of The Earth:

What can be done on fifteen acres of land in the Salt River Valley of Arizona, with energy and common sense, is well exemplified by Mr. Rhodes, who has fifteen acres, three miles southeast of Phœnix. A careful farmer, he has made a success by applying himself to his business, and to-day his fifteen acres are worth many times over the original cost.

Dairying, hog raising and poultry have put Mr. Rhodes in comfortable circumstances. On his fifteen acres he keeps eighteen cows, milking about fourteen on an average. He sold last year in butter alone $2,400. His skim milk was fed to his calves and hogs, the calves selling at two months old for $12 per head. He sells about $500 worth of hogs every year, also, fattened on skim milk and alfalfa.

(Continued on page 39.)

THE SOUTHWESTERN SUGAR AND LAND CO.

GLENDALE, ARIZONA

The Southwestern Sugar and Land Company's record-breaking campaign at their

BEET SUGAR FACTORY

GLENDALE, SALT RIVER VALLEY, ARIZONA

Has opened the eyes of the entire country. Unprecedented success has attended every feature of the experiment—beets of highest sugar content, jubilant farmers, swelling bank accounts, phenomenal demand for sugar-beet land.

IT'S GOING, GOING FAST

Some tracts of ten acres and larger plats still are left; these we are selling at astonishingly reasonable prices. No better investment to be found anywhere.

WRITE TO-DAY **R. P. DAVIE, Vice-Pres. and Mgr.**

When writing please mention THE EARTH

Located in the Center of the Farming and Fruit Growing Section of the Salt River Valley.

MESA offers exceptional opportunities to parties with moderate capital to secure a desirable home in a mild and healthful climate

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WHEAT
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OATS
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SORGHUM

HORSES
MULES
HOGS

CORN
IRISH AND
SWEET
POTATOES

ALMONDS
EUCALYPTS,
ETC., ETC.

We Would Like To Tell

you more about the Salt River Valley. If this magazine has interested you in some particular industry, write us for complete information. We will also give you the names of men engaged in that particular line so that you may correspond with them direct.

For twelve years I have made a specialty of locating people on farm lands in this Valley, and am glad to say that the men I have located are among the best friends of this office.

C. T. Hirst, the manager of my Real Estate department, James S. Day, in charge of the Buckeye business, and myself are practical farmers of long experience. If you will let us know how much land you want and what you want to raise, our experience will be an aid to you in selecting the land most suitable for your purpose.

I believe that my list of selected Valley farm lands is unequaled, and I am fortunate in being able to assist all newcomers in financing their purchases on most favorable terms.

Write us for a copy of our illustrated sectional map of the Valley which will be sent free with other interesting literature.

DWIGHT B. HEARD
Investment Securities — Real Estate
PHOENIX, ARIZONA

PEACHES
PEARS
APRICOTS
FIGS
APPLES

WATERMELONS
STRAWBERRIES
BLACKBERRIES
LOGANBERRIES
RASPBERRIES

COTTON
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ALL
KINDS OF
GARDEN
VEGETABLES

ROSES
PALMS,
ETC., ETC.

BEES - OSTRICHES - STOCK AND DAIRY CATTLE - POULTRY - SHEEP

When writing please mention THE EARTH.

On Fifteen Acres.

(*Continued from page 37.*)

He keeps in the neighborhood of 300 hens, and they bring him in $500 per year, above cost of their feed.

From all sources Mr. Rhodes says he takes in at least $3,750, and by doing all his own work, as he is able to do on fifteen acres, his profits are large. This is made possible by the fertility of the soil, no cold weather to interfere with the flow of milk of his dairy cows and green pasture the whole year through. Conditions like these exist nowhere except in the Salt River Valley.

This is the place for the man to start in who has small capital and plenty of energy.

J. J. Gould.

Phœnix, Arizona.

A Prosperous Poultry Raiser.

Editor of THE EARTH:

With ten acres of land and plenty of energy, Mr. and Mrs. Jackson have made a success here in the Salt River Valley, that can be duplicated by anyone wishing to come here and make a home for themselves. Poultry raising offers special inducements here, and the possibilities are greater than in any place we know of, all things taken into consideration.

For instance, the Salt River Valley winter climate is so mild that chicks hatched in the fall are considered just as good as those "spring hatched," as the winter does not affect their growth in any detrimental manner. Green feed during the winter months, an important part of a chicken's diet, is found in abundance, and pullets hatched in September are laying in February. Hatching chickens with incubators is made very easy by our mild winter climate.

Mrs. J. C. Jackson's methods are a little different from the general way of making money raising poultry. She hatches chicks and sells them when one day old for $10 per hundred, or 10 cents each. She started doing this a number of years ago, and can now hatch 5,000 chicks every month, having incubator capacity sufficient to handle this number. Since January 7, 1909, she has hatched 20,000 chicks, and during last fall hatched about 5,000 more, starting about September 1. This is the beauty of our winter climate, that is so ideal for growing chickens, no freezing weather being experienced during that time.

Mrs. Jackson has about 300 hens of her own and hatches eggs brought to her as well. Her own hens average $2 per day for eggs sold outside of the number used in the incubators. Her chicks sold netted her $1,037 for last year, over and above all expense for oil in the lamps, feed, etc. Her returns for the year, from all sources, are $2,500 and this on ten acres. She has a nice house, orchard and small berries for home use.

The demand for chicks is several times in excess of the supply, she never being able to hatch enough. Her results can be duplicated by anyone with a little capital and lots of energy. The Salt River Valley is the only place where such things are possible.

J. S. Griffin.

Phœnix, Arizona.

Figures That Talk.

Editor of THE EARTH:

In seven years' experience on the Cope and Tait ranch, containing 240 acres of alfalfa, and located south of Phœnix, adjoining the corporation limits, the lowest that has been taken off any year has been $65 per acre, and some years as high as $85 per acre. We usually cut three crops for hay, one crop for seed, and pasture the fifth crop.

We irrigate with pumped water, the water being pumped by the electric light plant. We cultivate these meadows every spring with a spring-toothed harrow, which keeps them clean from weeds.

We always have a good demand for our hay. It is often engaged before it is cut. We never have sold any hay for less than $7 per ton, and have sold for as high as $12 per ton. We have cut as high as three tons per acre the first cutting.

There is strict account kept of every dollar that is paid out and every dollar that is taken in, and anyone desiring to do so may examine the books for themselves.

We put out an orchard of assorted fruits five years ago. They bore some fruit the second year and have borne heavily every year since. Three years ago, we put out a row of cottonwoods one-half mile long, setting posts about two inches through. There are some of them now twelve to fourteen inches in diameter.

Cope and Tait.

Phœnix, Arizona.

There Is Money In It.

Editor of THE EARTH:

There is money in truck raising. This I can say without fear of contradiction. While I have not farmed or seen farming in all the other states in the Union, I have seen enough to know that there is good money in truck farming, if it is gone into in the right way and especially in the right section of the country. In my opinion there is no other place that affords as great opportunities as does the Salt River Valley of Arizona. In this Valley, owing to its unexcelled climate, the best irrigation system in the world, together with the deep sandy loam and Glendale loess soil, one can have something growing and ready to put on the market every day in the year. One man entirely engaging in truck raising needs only five or ten acres at the most. If he has too much land he is liable to put in more than he can attend to and will let some of his crop go to waste as it grows and matures here very rapidly. One cannot make a success unless he takes care of his crop after the rich soil and perpetual sunshine have done their duty. Anything can be raised here in the vegetable line that can be raised in any other country. The only difference is one can raise more of much better quality.

In small truck farming we include small fruit such as strawberries, blackberries and logan berries. These do well here, and to give an idea of what can be done here on blackberries, I will cite as an example one party who has four rows about one hundred and fifty feet long. The berries off of these four rows last year brought on the market a little over $200. This shows what can be done on one acre.

There have been strawberries on the market here every month in the year and of a fine quality, bringing the highest price.

We believe that anyone coming to this country, who is willing and able to work, can buy five or ten acres of land and make a good living and increase his bank account each month besides living well.

There are many things in the vegetable line that are planted here twice a year.

(*Continued on page 43.*)

CALIFORNIA LAND $100 PER ACRE.

Only $1.00 Acre Cash; balance of entire purchase in payments of 90 cts. per month for each acre.

Best part of San Joaquin Valley, 3 1-2 hours from San Francisco, in Merced County, junction Merced and San Joaquin rivers. $1.00 ACRE CASH, BALANCE OF ENTIRE PURCHASE IN PAYMENTS OF

90 cts. Per Month

for each acre. NO TAXES. NO INTEREST. RICH, level, deep, sandy loam. Ready to plow. No stones, brush, or timber. No malaria. GOOD WATER. IMMEDIATE POSSESSION given.

5-ACRE TRACTS

Perpetual water right with every acre. We're sole owners of canal supplying our land with water. There'll be a big rush to take advantage of this unheard-of offer, to buy rich, level land with water, so close to San Francisco. First come, first served.

Full particulars. Maps and photographs of actual scenes on our land. FREE.

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Preston Tract in 10, 20 and 40 Acre Lots

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More Water Than is delivered by any other style of pump and 25 to 33⅓% more water than is raised by any other pump of the same type is produced by the

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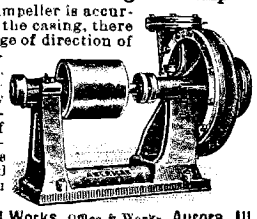
It's because the impeller is accurately machined to the casing, there is no sudden change of direction of the water in passing thru the pump, and the entire mechanical efficiency contributes directly to the raising of water. "American" Centrifugals are guaranteed rigidly. Ask for our new catalog.



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100,000 ACRES in the semi-tropical Salt River Valley now under cultivation. The city of Phœnix has a population of 20,000 people The Great Roosevelt Storage Dam and government ownership of canals now adding and her 100,000 acres. Semi-tropical production. Now is the time to buy land. Write to

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Prompt attention given to Legal Business

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An Open Letter.

(Continued from page 9.)

CHURCH BUILDING.

The Trinity Episcopal Church of Phœnix has just paid off a considerable debt upon its property, and will commence at once the erection of a church that will cost between $50,000 and $100,000. The present church is not large enough for its congregation, and there has been a need for such an edifice as proposed for some time.

TREMENDOUS POWER POSSIBILITIES.

I have so far made no mention whatever of the tremendous power possibilities of the Salt River Valley project. Expert electrical engineers have estimated that there can be located along the Salt River, between Roosevelt and Granite Reef dams, where the river has a fall of about 600 feet, several power houses by which at least 25,000 horsepower can be generated for manufacturing, lighting, agricultural, mining and other purposes. There is a ready and immediate market for all the power that can be generated and that it is thought wise to sell.

Two thousand horsepower will be required for lighting and power purposes in the city of Phœnix, 1,000 horsepower for the Indians at Sacaton, and 2,500 horsepower will be reserved for the pumping plants that may number from thirty to fifty, which the Reclamation Service are now locating in this Valley, where the underground flow has been already determined after careful study and investigation. Other power will be needed for local manufacturing and railway purposes, making a grand total required now, and in the early future, for home or local use alone, of seven or eight thousand horsepower, if not more. With the completion of the dam, it is estimated that about 7,000, horsepower can there be developed, and as much more in the new Eastern canal, the Arizona canal and a new power house, which it is hoped will be constructed during this or the coming year near the Hole-in-the-Rock. Mining syndicates, both at Globe and at Kelvin, are eager to close contracts for all surplus power not needed in the Salt River Valley. The income annually from this source alone, will, before many years, easily run into several hundred thousand dollars.

IS IT NOT THE PLACE FOR YOU?

Is not a valley of such possibilities an attractive place for a home? With so much planned and being executed, is it not an inspiration to the public spirited, progressive man who is ambitious to do things, and is looking for the opportunity? Certainly such a man can here find his earthly paradise.

Land Values as Related to the Water Supp y.

(Continued from page 11.)

Among the deciduous fruits he can raise:

Peaches, pears, pomegranates, apricots, plums, nectarines, figs, prunes, apples and quinces.

Flowers are now grown here commercially with great success; roses, violets, chrysanthemums and sweet peas, being remarkably successful.

It is literally true that if ever a land deserves to be classed as the land groaning with crops and literally "a land of milk and honey," it is the Salt River Valley.

The eastern man naturally inquires, what are these lands worth? The answer to this question depends upon the class of land, state of cultivation, its improvements, distance from town, transportation and the development of the particular neighborhood; but as a general rule, land, say six miles from Phœnix, to-day in cultivation, with an absolute and unquestioned water supply, can be bought from $125 to $150 per acre. These lands, intensively farmed in small tracts, will pay a net revenue of from 20 to 40 per cent on this price.

Lands further from town and not to-day in as good cultivation, can be bought for about $100 per acre. Other land, near the outskirts of the reservoir district and not to-day in cultivation, but with a surety of water, can be bought for from $75 to $90 per acre.

In the orange belt, land excellently suited for oranges and adjoining groves in successful bearing, but not now in cultivation, can be bought for about $200 an acre.

In the immediate vicinity of Phœnix, of course, prices are higher, and near Mesa, where the country is largely cut up into comparatively small tracts and where many people are making an excellent living on ten and fifteen acres, land is held at about $200 an acre.

In view of what these lands will produce, these prices are certainly exceedingly moderate and the Valley is now very rapidly settling up, the small farm is becoming the unit and as the land is farmed in smaller tracts, it naturally produces more intensively under careful handling and, therefore, is bound to steadily increase in value.

For the hard-working, energetic man of intelligence and common sense the lands of our Valley offer a return on his labor and intelligence which will soon put him in an independent position, and it is to this class of men that the Salt River Valley particularly appeals.

On application, I shall be glad to furnish any one interested, the names of men engaged in these particular lines of work so that they may take up correspondence with them direct and by talking direct to the man on the farm, get his frank and unprejudiced point of view.

A Comparative Picture.

(Continued from page 10.)

There are many things of interest in connection with the irrigation of the Nile Valley not pertinent to the subject here considered, hence not given. One of the things most in contrast with ours, is the ancient machinery and methods, while in this Valley all modern machinery and methods are used. Reapers, mowers, thrashers, steam dredges, etc., while each farmer has a comfortable Home (always use a capital H) on his own land for himself and family, with a good schoolhouse near by for his children's education.

A few facts in regard to the two largest dams in the world, namely, the Assuan on the Nile and the Roosevelt on the Salt: It is four miles from Assuan to the head of the cataract where the largest dam is built. Preliminary surveys were carried on for ten years, until in 1894, three men, an Englishman, a Frenchman and an Italian were appointed a commission to locate it. During the course of construction the engineers had a hot berth. From early spring to late fall the thermometer ranged above 100 degrees F. in the shade, often reaching 120 degrees and sometimes 130 degrees. But little relief came at night, on account of the heat given off from the granite rocks adjoining it.

This dam is seventy feet high, but from bottom of foundation, in places, 120 feet high. It is 6,400 feet long, twenty-three feet wide at the top and eighty-two feet at the bottom. It contains about 1,000,000 cubic yards of masonry. The depth of water at the dam is sixty-five and one half feet when the reservoir is full. The first cost of the dam was nearly $10,000,000, to be paid with interest in sixty semi-annual installments, which makes the total cost of the dam nearly $23,000,000.

The dam in the Salt River is only 200 feet long at the bottom and at the crest 780 feet long; more than a mile shorter than the Nile. It has 340,000 cubic yards of masonry; a little more than one third as much as the Nile. It is to cost $2,500,000, or less than one third of the Nile. The capacity of the dam is nearly one and a half million acre-feet, or about one fourth that of the Nile. Thickness of dam at the crest twenty feet; nearly the same as the Nile. Thickness at base 168 feet, or more than twice that of the Nile. Height of dam from foundation is 284 feet, or two and one-third times higher than the Nile. Depth of water storage 220 feet; three times that of the Nile. One important fact in favor of the Roosevelt dam is its nearness to the land to be irrigated, about fifty miles distant; while most of the land irrigated by the Nile dam at Assuan is hundreds of miles distant; a very great advantage, as any one acquainted with irrigation readily understands. The reader may not be able to visit the Valley of the Nile, because of the distance, but he can visit the Salt River Valley, because of its nearness, and receive a hearty welcome from as intelligent, industrious people as can be found in the United States.

Means Millions.

(Continued from page 13.)

and they were embarrassed to see the determination of the beets to run to seed. They did not conceive that the seed would be worth anything and they feared that if they were allowed to go to seed they would deteriorate very much in saccharine matter, or even be ruined for sugar, as are the seed-growing beets in the old country. That, they feared, would give a black eye to the industry of sugar making, so they began breaking off the seed stalks from most of the fields, determined to restrain the beets by brute force—if they couldn't do it by prayer. So persistent were the beets that finally small areas in different patches to the total of about a hundred acres, were allowed to have their own way, and Mr. Myer decided to lay quiet and watch for results.

He found that on this acreage the seed matured splendidly. Then he gathered some of the seed and pulled up the beets. The latter, when tested, showed that their sugar content was only about one-half of 1 per cent less than the sugar content of other beets in the same locality which were not allowed to seed. The question next to determine was whether the seed would germinate. He took 100 seeds and tested them. The result, said Mr. Davie last night, was the best result he had ever seen in his life, or had ever heard of, and he has been testing beet seed for ten years. The 100 seeds threw up 237 sprouts. Each seed had at least one sprout, nearly all had two and a few had three and four sprouts. Not one seed in the 100 failed to germinate.

Mr. Davie at once wrote the facts to Secretary Wilson, of the agricultural department, and asked him to send an expert out here at once to look into the matter. If his report is not disheartening, Mr. Davie will make a trip to Europe

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when the fall excursions ripen and when he comes back he will bring with him the best all-round German seed expert he can get.—Arizona *Republican.*

More About the Beet-Sugar Industry.

(*Continued from page 18.*)

the product of the Salt River Valley, and if this is not enough, more will be built.

The future holds forth to the careful farmer, great possibilities, and sure reward, as nowhere else can climatic conditions, soil and market, be found combined to assure results that will be unprecedented in net returns to the agriculturist.

Dairy Cows in Salt River Valley.

(*Continued from page 24.*)

Nowhere can such conditions be found or results duplicated. There is not a drawback to the dairy industry here.

It is a well known fact among dairymen that a large percentage of the cow's food is absorbed by the animal in keeping warm during the winter months, hence the difficulty in keeping up the flow of milk. With our winter weather this feature is eliminated, all food over and above what is necessary to merely keep the cow in ordinary physical condition, goes to produce milk. Therefore, the dairy industry offers here unequalled opportunities to the man who has energy and ambition to succeed. Nature is doing more for the dairy farmer in the Salt River Valley than anywhere else, and the future is full of great promise.

The Arlington Valley.

(*Continued from page 27.*)

four horses and two cows he had at the time. What Mr. Anderson has done, others can do; his case is mentioned only to show the possibilities of the country. Numerous similar cases might be cited.

A feature of the Arlington section, different from most of the agricultural areas in the Salt River Valley, is its facilities for carrying on the business of stock grazing on the open range in connection with farm and pasture. The Arlington farm section is only about three miles wide. The river runs along one side of it and the desert mesas flank the other with mountains farther back. The desert, in a good year, that is one with an average or more than average rainfall, will furnish grass and browse for stock the year round. But the stock grower should own a farm in conjunction so that his own pasture would be available for the maintenance of stock. If the desert furnishes all necessary grazing, his stock business will almost run itself and the hay product of his farm will be greater. However, cattle grazed on the farm will make fully as good or better beef and while the hay crop may be less, under such conditions it is certain the advanced price of the hay will more than offset the extra cost of raising the cattle, and he will be better off than the farmer who has no stock to grow wild on the desert in a favorable year, at practically no expense and to be held as a "home market" for the hay when the feed is plentiful.

The Arlington Cattle Company is engaged in both ranching and grazing and while it has many acres of pasture, for five years past cattle have been raised on the open range without resort to pasture. Montgomery and Cocke have been doing a grazing business exclusively for years. C. W. Peterson has cattle on both ranch and desert and is making money. With the segregation of the larger holdings into twenty, forty and eighty acre tracts, there are similar opportunities for many more settlers.

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GREAT SALT RIVER VALLEY

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Plenty of WATER, Fertile SOIL, Splendid CLIMATE, Where Planting Means Crops to Harvest, and farming is scientifically carried on, with enormous profits. :: :: ::

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Name_____

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When writing please mention THE EARTH.

At Scottsdale.

(*Continued from page 27*

tons per acre each cutting, depending on years after planting. I have cut over four tons per acre at a cutting from a field that had been in alfalfa over fifteen years without any re-seeding. As every irrigation carries fertilizer upon the field, the soil grows richer and will raise heavier crops with every successive planting. I have raised barley that gave thirty sacks to the acre weighing on an average 109 pounds to the sack, and that sold at $1.47 per hundred pounds. My oats (white Australian), as everybody in this section of country knows, have so far beaten the record of the world. They were simply immense—forty acres averaged nearly if not quite seven feet tall—the tallest samples measuring eight and one-half feet. The forty acres yielded as near as could be determined ninety bushels to the acre. I sold them for $1.80 per hundred pounds. With good farming and judicious irrigating there seems to be hardly any limit to production. With intensive farming and a variety of crops, twenty acres will support a family of four

Our population increases a million each year. Our land area doesn't increase an acre. That's why it pays to buy good farm lands now in the

"Santa Fe Southwest"

Everybody knows that the United States is growing fast.

Few persons realize that our population increases **a million a year!**

That's the average annual rate of growth since the last census. Part of this is excess of births over deaths. The remainder comes from foreign immigration.

These "million-a-year" new mouths all must be fed with food from our farms. These "million-a-year" new bodies all must be clothed with other farm products.

Factories are necessary, but they only take what the land produces and make it into food and clothes.

Always the **demand is greater,** year by year, for what the earth can grow. The supply of land remains about the same. To be sure the cultivable area is added to a little, but it does not keep pace with the added population.

Just a simple sum in arithmetic: Amount of land a fixed quantity; population rapidly growing; result — **land goes up in price.**

In most European countries values are so high that landless farmers are compelled to seek the cheaper lands of this country. If only one-quarter of the foreign immigration finds its way to the agricultural lands of the United States, it takes a big acreage off the market every year. What's left is worth more.

The Eastern farmer seeks the Middle West. The Middle West farmer pushes on to the Far West. **No longer is there a frontier.** And salaried city men, country-bred, are buying small farms, too.

The day of so-called "cheap" lands is almost gone. There are still a few score thousand homesteads left in the semi-arid region, which ultimately can be made productive by irrigation.

Dry farming is adding other areas to the crop-producing territory.

But these, though welcomed, are only a drop in the bucket.

Land is the **basis of all values,** so why not get in now on the "ground floor?" Temporary periods of stationary prices may come. For a long hold — ten, fifteen, twenty years — your Southwest farm, if bought right, will surely double or **quadruple in value,** to say nothing of crops raised meanwhile.

The Santa Fe has no land to sell. Its business is to haul passengers and freight. It wishes, however, to help build up the communities along its lines.

Write me to-day, for our Southwest land folders, describing Kansas, Oklahoma, Texas, Colorado, New Mexico, Arizona and California — the best part of the best country on earth. They tell the truth. Say which section you are most interested in. Give your full name and address. I will also send you our immigration journal, *The Earth*, six months free.

C. L. SEAGRAVES, Gen. Colonization Agt.,
A. T. & S. F. Ry. System,
1171-J Railway Exchange, Chicago.

When writing please mention THE EARTH.

STABILITY!

That is the keynote of the success of any Farming Country. The soil must be rich and productive and it must have lasting qualities. We have land here that has been farmed 25 years and it produces better crops to-day than at first, and we never had a failure.

Here are some of our advantages: Deep rich soil, no alkali, ample rainfall; raise crops suited to both the North and the South (cotton as well as wheat); while corn, oats, alfalfa, maize, barley, millet, flax, broomcorn, potatoes, celery, onions and all vegetables, and fruits of all kinds, *do as well here as anywhere.* Purest of drinking water in unlimited quantities at 32 to 60 feet, making the cost of obtaining it nominal.

This is a natural country for stock and will always be — and our climate is *perfect for 8 months* in the year.

You want to know the *disadvantages?*

It is somewhat windy in the spring months, *but no more so* than any Prairie Country. That is about all there is the matter with this country, and any other place has more "troubles" than that.

I have some new, up-to-date literature which I will send on application from people with honest intentions of locating somewhere in the West. All others who merely want to see the pictures, send 5 cents in stamps. I have lots of time if you mean business. Take my advice and buy a FARM near

PLAINVIEW — TEXAS

The Peerless Princess of the South Plains

Wm. NIHOLSON,
Real Estate **Plainview, Texas**

When writing please mention THE EARTH.

"Sight-un-Seen" is no way to sell Real Estate—

The SALT RIVER VALLEY of ARIZONA is a "sight-un-seen" by thousands of safe investors; otherwise we would not have to invite your inspection. REMEMBER, there can be no safer investment than real estate in a growing community. Seeing is believing; we have the listings we can recommend, and we are ready and willing to show you the goods.

HARRY KAY & COMPANY, Agents
Real Estate and Insurance
PHOENIX, ARIZONA

HARRY KAY, Illinois. H. W. BERRYMAN, Kentucky.

When writing please mention THE EARTH.

or five in comfort and enable them to save a nice sum of money besides. It is the paradise for all kinds of poultry and stock, and from September 1 to June 1 the best climate on earth and the rest of the year as good if not better than the summers in the Middle West.

Rural Home Life.

(*Continued from page 31.*)

So with an undercurrent of fanciful thought, the busy housewife weaves the fibre of her daily existence, underlaying it with tender care of all things living, from the flowers in her garden which may beautify her home, cheer fevered invalids lying on beds of pain, or decorate the house of God, to the downy chicks which are her special interest, not without a thrifty recognition of future profits to swell her own private income, which may further be enriched by egg money, butter money, berry money, as her inclination and strength may dictate or allow.

Nor may the country woman who would live the wider life forget her neighbors. Many neighborhood clubs are now being formed for self-culture and exchange of ideas, which will surely tend toward a moral and intellectual up-lift of the communities in which they exist.

The children and their schools are more and more becoming woman's peculiar care, as evidenced by child study circles, and educational departments in clubs.

The country churches excel in hospitality and welcome to strangers, and the warm smiles and outstretched hand show practical interpretation of the precept, "And thy neighbor as thyself."

Women of America who love the sunshine, come to Arizona! But let those who come burn their bridges, for it is written that whoso drinks of Hassayampa waters must needs remain within the shadows of the mountains that guard this favored Valley round about. However, they leave not hope behind, but find it waiting to welcome them upon their new thresholds.

No great equipment is needed, only the calm courage which pertains to woman, the power behind the throne; only an acknowledgment of the blessedness and dignity of labor; only a warm human interest in all whose destinies touch, realizing that no life need be lonely which is not self-centered; and last, but not least, a kindly, humorous acceptance of things as they are and a firm belief that

"God's in His heaven,
All's right with the world."

Is Salt River Salt?

(*Continued from page 33.*)

early Spaniards named everything they encountered after the day's saint or feast or after the patron saint of some member of the party. And every day had its saint, with some days that had them in double supply. I have seen an old map on which the stream later was called the "Salinas," the pretty Spanish word for saline, and some writers have called it the "Salado," which means about the same. Then Jack Swilling, or some other old timer, cut it short, and "Salt" it has remained ever since.

There *is* salt in the stream, "sodium chloride," if you prefer the full chemistry of it, but in very minute proportion. Of "salts" there are a plenty, just about the same salts that have made famous the springs at Waukesha. According to one eminent physician; "If we had this water back East, we'd be bottling it and selling it to the millions as a panacea for all ills." Possibly the most notable solid

Limited List of Southwestern Land Men

THE MESILLA VALLEY in NEW MEXICO is now attracting more attention than any other *Irrigated District* in the United States.

The *Big Elephant Butte Dam*, now well under way, when completed will make the largest reservoir in the world and will water 180,000 acres of the richest fruit and vegetable land in the southwest.

The Leasburg Dam, a part of the big project is now completed and furnishing water to 20,000 acres, of which about one-third is on the market.

Write for booklet and free information.
LAS CRUCES REALTY CO.,
Las Cruces, New Mexico.

HALL BROTHERS, Fowler, Colorado.

Relinquishments for sale cheap under new ditches and reservoirs; fine level land; no sand; good soil; covered with grass; close to Fowler, a fast-growing town. This country is being rapidly settled up. Get a foothold now and grow up with the country.

D. H. BANE LAND CO.
(Successors to D. H. Bane & Co.)
Main Office, Lamar, Colorado. Branch Office, 2129 Indiana Avenue, Chicago, Ill.

High-grade irrigated farm land in the home of the Rocky Ford cantaloupes, sugar-beet, and alfalfa, the renowned Arkansas River Valley of Colorado. At present prices, the prospects for farmer and investor are without parallel. Excursions twice a month. Write us.

FOR SALE.

A choice half-section in best part Texas Panhandle. $2,000 less than real value. Fertile soil. One and one-half miles new hog-tight and barb wire fence. Adjoins highly improved ranch. Railway station five miles. Part cash, balance easy terms and long time. 6 per cent interest. Taxes very low. Address Owner, 2911 Fifth Ave., Denver, Colorado.

E. H. ANDRUS, Agent, Room 6, Union Station, Kansas City, Mo.

There is only one Kansas, and Andrus is her great land agent. Now operating over the Santa Fe System. Has nearly 2,000,000 acres of land now on the market. Land shown free of charge. Both improved and unimproved farming lands in all parts of the Southwest on five and ten years' time at 6 per cent interest.

THE ARKANSAS VALLEY REALTY CO.,
La Junta, Colorado.

We have for sale a large list of the best irrigated lands, suitable for growing alfalfa, sugar-beets, cantaloupes, fruits, wheat, oats, etc., located in the Great Arkansas Valley in Colorado. Climatic conditions are ideal, and the lands and water rights the very best. Correspondence solicited.

HOW ABOUT THIS?

Have you written the Tulare County Board of Trade, Visalia, Cal., for illustrated literature? If not, write them at once and learn about the best things California has to offer the homeseeker.

HAMILTON CO., KANSAS, land offers more opportunities to homeseekers and investors than any lands in the state for the money. Also irrigated farms for sale in Arkansas Valley of eastern Colorado. S. R. ELWOOD, Holly, Colorado.

FOR BARGAINS IN PANHANDLE LANDS, write Dr. G. A. Vawter, of Dalhart, Texas, who owns and sells lands direct to purchaser.

Some bargains in improved farms and hotel property in new town.

I have on the market 35,000 acres of land in a body in Stanton County, Kansas. This is fine smooth wheat land with deep rich soil and very productive. Want to sell to an immigration outfit that can colonize it. This the last large tract on the market in southwest Kansas. Address, J. B. HAMMOND, Syracuse, Kansas

Land, climate and social conditions at Phœnix ideal for permanent home of wealthy or retired. Also for farmer, horticulturist, dairyman or stockgrower. Earliest, best and highest-priced oranges grow here. Come and see or write me. W. K. JAMES, Phœnix, Arizona.

PHŒNIX IS HOMESEEKERS' PARADISE. 17 years experience here equips us to help you wisely select Salt River Valley Farms for homes. Write us for full information and literature, free. VALLEY REALTY AND TRUST COMPANY, Phœnix, Arizona.

N. A. MORFORD, Phœnix, Arizona, deals in orange, alfalfa and sugar-beet lands in the famous Salt River Valley, Arizona—4,500 acres on hand. Phœnix city property for sale.

GUARANTEE—Price refunded if property does not "make good" on representations

We sell lands under the Great Roosevelt Dam in the Salt River Valley, the garden spot of the Great Southwest. No blizzards, no cyclones, no snow. 350 days of sunshine every year. Address Pomeroy-Guthrie Realty Co., Mesa, Ariz.

KANSAS FARMERS will clear over $100,000,000 on this year's crop of wheat and alfalfa. Thousands of acres of the finest wheat and alfalfa land in the state for sale. Write.
C. M. Niquette & Son, Garden City, Kansas.

CASH for property—any kind, anywhere. If you want to buy, sell or trade, address Northwestern Business Agency, Minneapolis Minnesota

The Great Roosevelt Dam in Arizona

IRRIGATES A VALLEY OF WONDERFUL FERTILITY

Are You Interested in Obtaining an Irrigated Farm?

Do you know that this Valley produces the earliest Oranges and Grape Fruit, having a flavor surpassing all others? The finest Peaches, Apricots, Plums, Pears, Figs, Dates and all the Berries? Our crop of Wheat, Oats, Barley, Sorghum and Kaffir Corn are unequaled

For Alfalfa, this Valley excels all others in tonnage per acre and price per ton. From four to six cuttings per year. From fifty to eighty dollars per acre per year is realized on this crop.

The dairy industry is one that gives the highest returns in the Salt River Valley. We have the markets for all the products that can be produced in this line.

The beet-sugar industry is firmly established. The success of this year demonstrates how important an enterprise it is for the Salt River Valley. High tonnage per acre, high sugar content are the characteristics of beets grown here. You should investigate now. Do not delay.

The Roosevelt Dam is fast nearing completion, and land is rapidly advancing in value. Come to a country of 350 days of sunshine during the year, the most beautiful winter climate of any place in the world. No snow—no ice—each day a perfect fall day, long to be remembered. Investigate this winter on your Western trip.

For booklets and information write,

GREENE & GRIFFIN REAL ESTATE AND INVESTMENT COMPANY
PHOENIX, ARIZONA

mineral constituents are lime sulphate and lime carbonate. Though they crust on the insides of boiler flues, they even add to the healthfulness of the water for human consumption. According to the doctors, there is no land which has fewer cases of kidney trouble than around Phœnix. Children, drinking the water as only children will, are notably healthy, with not quarter of the sickness known to youth in the East. The hotter the weather the healthier they are.

Salt River, above Phœnix, is a beautiful mountain stream, fed by trout-filled brooks that flow from pine-clad fastnesses. Most of the saline elements in the water come from Carrizo Creek, a small tributary which might be dammed off, were the result worth the expense—which it isn't. Most of the lime sulphate comes down Tonto Creek. It is a good fertilizer and an antidote for alkali. Most of the salts held in solution are even beneficial to vegetation and the others are in too small a proportion to count—like the story of the homeopathic dose of medicine poured into the Mississippi at St. Paul and taken out at New Orleans. The land steadily improves upon a treatment with Salt River water and so does the human system.

Yes, the Salt *is* salt, but the water is good for what ails you. Come and try it.

The Tempe Normal School.

(Continued from page 35.)

is no spot on earth, outside the Salt River Valley, where the old folks can be so advantageously building up a home in a new country while the oldest daughter, without paying tuition, is finishing her education and preparing to step immediately into a good, comfortable, paying position. This is a school for strangers to investigate.

There Is Money In It.

(Continued from page 39.)

We will name a few and give the best time for planting.

BEANS: From March 1 to April 15 and August 15 to September 15.

BEETS: January to March 15, September and October.

CABBAGE: Plant seed August to November. Set plants January and February, September to October 20.

CARROTS: Plant January and February, market August to October 15.

CORN: April 1 and July 15. Corn planted in July is very fine and we have the roasting ears up to December.

The Salt River Valley is famous for its delicious watermelons and unexcelled cantaloupes, which bring the top price in the eastern market.

Last but not least important is our asparagus. It is claimed by the best authority to be the finest in the world; easy to grow. Immense profits are made on this one article.

The place for energetic, intelligent people to cast anchor is here.

The writer will be glad to answer any and all questions to the best of his ability.

William M. Costley.

Phœnix, Arizona.

Poultry and Eggs.

Editor of THE EARTH:

We came to the Salt River Valley of Arizona about eighteen months ago, from Mercer County, Ohio, and started into the poultry business. We buy and ship poultry, dressed and alive. We find there is lots of poultry raised in the Salt River Valley, but not nearly enough to supply the demand. The poultry raising is principally managed by the women. We are paying at the present time 15 cents a pound for hens and 20 cents a pound for turkeys. Ducks and geese are also very profitable. We believe this is a great place for more poultry growers.

J. B. Heyne,
Manager City Poultry Yard.

Phœnix, Arizona.

Do you know

The South & West Land Co.?

They have just placed on the market another large ranch containing the finest farm land in the Pan Handle of Texas. Well located near Amarillo, and a big bargain. 160 acres or more on easy terms.

WRITE FOR ILLUSTRATED LITERATURE

1633 Monadnock Bldg. = = CHICAGO

CALIFORNIA LAND AT REEDLEY, FRESNO COUNTY, on the Famous Kings River

Is better than a gold mine, because surer in net returns. Soil, water supply, drainage, and climatic conditions are perfect. District water, cheapest in California. ORANGES, PEACHES, and GRAPES are the gold-producing nuggets. Land for sale in from 20-acre tracts to 3,000. Better see. Write for Booklet.

When writing please mention THE EARTH **LYON LAND CO., Reedley, California.**

Mesa, Arizona, Cantaloupes.

Editor of THE EARTH:

Answering your inquiry as to what can be made from cantaloupes in this district, would say that the net profit varies, depending on different seasons, and the price obtained for the cantaloupes. All the soil in this district having been in alfalfa for many years and pastured, is very rich and the yield *most* prolific. I am compelled to hire everything done, even to the management; have kept a very careful account of expenditures and receipts, and have received for the full acreage planted $300 gross, per acre, and $200 net, per acre.

A. J. Chandler.

Mesa, Arizona

"Health, Wealth and Happiness"

In

The Great Salt River Valley

Which is the most fertile in the world, and will soon be the most beautiful.

With our fertile soil, perpetual sunshine and best irrigation system in the world.

With our large sweet oranges, that bring the highest prices in the eastern markets.

With our unexcelled alfalfa that can be harvested from five to six times a year, and furnish good pasture the remainder of the year. And better than all our fine climate; you will never live any other place, if you will spend one year here.

With all of these facts, and many more space will not allow us to mention, this Valley is destined to be the most beautiful and wealthy under the sun.

If you come here NOW, we can locate you on a good home at reasonable prices.

Ten acres here is equal to fifty acres in most any other country.

For further information and printed matter, address

COSTLEY & THOMPSON'S
Real Estate Exchange
31 W. ADAMS ST.,
PHOENIX, ARIZONA

When writing please mention THE EARTH.

Are we pleased with farming in the Arkansas Valley of Colorado? YES!

BECAUSE BY IRRIGATION:

When we want rain we don't have to beg for it. We get just the right amount at the right time and right place.

We are not subject to the weather man's whims.

Our crops are always good; our products well matured and our profits large.

Our roads are always good. It don't rain on our roads, it only rains on our crops.

Our church, school, rural mail and phone service are as good as yours.

Our neighbors are sober, industrious, social and ever ready to welcome newcomers to the **BEST COUNTRY AND CLIMATE ON EARTH.**

A full, prepaid, perpetual water right is deeded with every farm we sell.

This land can be bought for less than half what you can sell it for, in a short time. There is no cheaper land just as good.

There are many other reasons. Let us tell you of them.

THE D. H. BANE LAND COMPANY
Lamar, Colorado

When writing please mention THE EARTH.

Quick Returns
in
Salt River Valley Arizona

Beet Land Beet-growers Paradise, large returns, prices $75 to $200 per acre

Alfalfa Land ranges in price from $100 to $200 per acre, yields 8 to 10 tons per acre annually, which sells for $8 to $16 per ton

Garden and Small Fruit Lands are valued at $100 to $300 per acre, and net the owner annually, $300 to $700 per acre

Orange Land can be had for $100 to $500 per acre and yields the owner a net income of $300 per acre

Homeseekers or those looking for investment are invited to write us for particulars and specific information

Dealers in Salt River Valley Lands in large and small tracts, also city properties

C. L. PAGE
N. J. HANLEN
JOHN ALLEN MOORE
Members of the Firm

PAGE-HANLEN & COMPANY
43 West Adams Street
Phoenix, Arizona

H. H. Fridline, Salesman

When writing please mention THE EARTH.

Dairying a Success.

Editor of THE EARTH:

The Mesa, Arizona, lands are remarkably well adapted to dairying, and how well is often remarked by thoughtful observers:

The soil is productive, and is the natural home of the alfalfa; hay-making conditions are perfect; green grazing the year round; storms, cyclones and blizzards are unknown, and the cow is happy "forever afterwards."

Recognizing these conditions, the people of Mesa have installed a creamery and ice plant on the co-operative plan, thereby insuring the highest price for milk to the producer. The creamery has a capacity of 50,000 pounds of milk per day. It has been successfully operated for five years and, after paying off an indebtedness of $19,500, it is now in a position to advance the price of milk.

I do not hesitate to say that for dairying and dairy stock records that there is no place on earth superior to this Mesa country. Mesa will yet set the pace for world records, and every item of food will be produced on this soil on which the cow stands.

This assertion is not exaggerated. Last fall Mr. Macdonald, while at the fair in Chicago, bought a small herd of Ayrshire cows and employed Mr. McMinn, the man who was caring for the cows at the fair, to come to Arizona with them. The cows this season have beaten their previous records. To say that Mr. McMinn is delighted would be to express it lightly. One of these little Ayrshire cows gave a steady flow of sixty-eight pounds, and for several days reached seventy-three pounds. A heifer, just two years old, and not bigger than a fawn, gave twenty-two pounds at a milking.

Dairy stock breeders could well take notice. Mesa is without a doubt the place to make records.

The farmer recognizes the dairy cow as an adjunct to the farm. With her the pigs are given a start, the hens are kept in good spirit and the monthly expense bill is met. The garden and orchard is a source of pride and satisfaction; the crop is possible of a profitable rotation.

The use of stable manure is more profitable on some lands than others. Some say it is more profitable to manure rich soils than poor. Be it as it may, to get the best results we must select a retentive soil, indeed, exactly the soil that is found on every acre of Mesa lands. The good farmer will plant in turn onions, beets, sweet potatoes, cantaloupes, corn, wheat, garden truck and fruit. These crops can be taken in rotation, and with proper care bestowed on each will obtain results beyond the imagination of those not living here.

D. D. Smith.

Mesa, Arizona.

Vegetable Gardening.

Editor of THE EARTH:

I have followed gardening in several states, and during the past year have been engaged in similar work here. I find conditions favorable for the small gardener. During the past six months I have been supplying the local market at Mesa with fresh vegetables and shipping considerable to outside points. My partner and myself put in five acres to onions, beets, carrots, lettuce, turnips and cabbage. We also planted celery, but got it in at the wrong time, and it all went to seed. We found the most profitable crop was onions, with beets, carrots and lettuce following. These should be planted in September and October, and are then on the market during the best season of the year. The small gardener does best if he joins with others and ships in car lots. The commission houses will take all surplus from the small gardener's hands at a good price.

Onions and beans, if grown in large quantities, and shipped in car lots would be profitable crops.

During the past six months our crop averaged us about $100 per acre or at the rate of $200 per acre per year. The five-acre gardener, who owns his own land and has a couple of boys to help him, should easily clear $1,000 per year. The soil here is remarkably productive and much of it, especially the more sandy variety, is favorable to growing all kinds of vegetables. We have now planted cantaloupes, watermelons, summer squash, egg plant and tomatoes. Tomatoes yield a big profit as do early cantaloupes and watermelons.

I believe that the truck gardener can always be assured of a comfortable income, with much less hard labor than in the eastern sections of the country.

C. H. Gilbert.

Mesa, Arizona.

The Mesa Country

By Dr. A. J. Chandler

No reader of THE EARTH, interested in bettering his or her condition, can afford to miss a careful reading of this article from the pen of a man who knows.

Much has been said of the beauties of the Salt River Valley, and indeed there is much room for much more to be said, but the principal purpose of this article is to deal, as much as possible, in facts—practical facts, which will be answers to the many questions that would naturally be asked by "The Man from Back There" when he arrives in the Salt River Valley.

In order to better understand the situation as it really is, I am going to deal with the man who sells his horses, cow and poultry and, perhaps, his farm and arrives in Mesa, Arizona, with $2,000, a liberal supply of energy and good judgment. I am taking the man with $2,000 for an example; the illustration will, of course, include every man with more than $2,000. The man arriving here with less than that sum would be met by different but corresponding conditions.

The man who arrives here with $2,000 will be able to purchase a twenty-acre tract of the best land for $3,000. He will pay one-third of the purchase price down and use the other $1,000 in putting up a house and stocking his "ranch." This sum would not, of course, include the better house for it must be kept in mind that the Salt River Valley is an all out-of-doors proposition. Many people sleep out the year round and find health in the invigorating climate. However, since the twenty acres have been secured, the house built and the horses and cattle purchased, the next thing is to commence figuring on the way to complete the payments on the land.

Now, doubtless, the reader has already exclaimed that the land is high priced, which demands an explanation of what high-priced land really is. The lands in

The Immense Roosevelt Dam is Storing Water
The Big Diversion Dam is Completed and in Operation
and the great

Salt River Valley of Arizona

To-day has no Rival—it *is* the Richest Valley Under the Sun

With an abundance of irrigating water for the lands prosperity is guaranteed, and happiness for the people of this beautiful and most fertile and productive Valley on earth is assured. Come and look it over. Don't be persuaded by any one that there is anything better or "just as good." Here one acre of land is worth more than four acres of land in the rain belt. See it for yourself. Join us now and reap the rich harvest of the future.

This is a country where the farmer can farm twelve months in the year, raising from four to six crops, and where the investor can double his money within two years.

We are Agents for the choicest Alfalfa, Orange, Sugar-Beet, Melon and Fruit Land in the Valley and City Property

To Whom it may Concern:
We have known the members of The H. I. Latham Co. for many years and cheerfully recommend them as reliable and responsible men, being thoroughly familiar with local conditions and Real Estate values.

Signed { R. B. BURMISTER, Cashier Phœnix National Bank.
S. OBERFELDER, Cashier National Bank of Arizona.
LLOYD B. CHRISTY, Cashier Valley Bank of Phœnix.

Write or call on us for further particulars

The H. I. Latham Company

Real Estate and Investments

PHOENIX, GLENDALE AND MESA, ARIZONA

the Salt River Valley run from $100 to $250 per acre, which naturally seems high priced to the man from Kansas, where lands are selling at from $25 to $50 per acre, but the man from California, where oranges, grapes and practically the same things raised here are cultivated, and who is accustomed to land going at from $300 to $1,000 per acre, considers it very low, indeed. Now, as a matter of fact, the Kansas land is higher priced than the California land.

Lands throughout the middle states seldom, if ever, produces one-fourth the value of the land yearly. There are thousands upon thousands of acres that are cultivated annually where the seed is never returned. But taken for granted that land, which has a value of $50 per acre, will produce $12 per acre yearly and that land in the Salt River Valley, which is valued at $150 per acre will produce from $150 to $200 per acre annually, it can easily be seen which is the high-priced land. Then, again, take California where land is planted to orange groves and sells at $1,000 per acre. Such a figure seems out of all reason until it is learned that $500 worth of fruit is taken from each acre in the grove, then it becomes evident that low-priced land does not mean cheap land, nor that lands selling up in the hundreds is necessarily high priced.

The cantaloupe industry furnishes a fitting illustration of what can be accomplished with Salt River Valley land costing $150 per acre. Cantaloupes are planted in April and harvested in July. Quick returns on the money invested and a crop that requires very little capital at the start. Last year I realized approximately $150 per acre from my cantaloupes and it was not a very good crop year at that. I have taken as high as $300 per acre from my cantaloupe field—on land which was exactly the same as that selling for $150 per acre.

Another point to be taken into consideration with lands in the Salt River Valley is that there are no waste places. A twenty-acre tract includes twenty acres of tillable land.

The real difficulty comes in suggesting the best way in which to divide a twenty-acre tract in order to make it the most valuable and still the most productive. Unless one was especially capable of fruit culture, it would be advisable to take up the alfalfa, cantaloupe and sugar-beet industries and, of course, start an orange orchard as soon as possible.

The alfalfa proposition is probably the easiest way in the Valley to make money. The crop is sometimes cut as high as six times annually, and there are three distinct ways in which to derive revenue from it—hay, seed and pasture. Directly connected with the pasturage is that of dairying, and it is one of the large items in the Valley. Mesa has a co-operative dairy and ice company owned by the farmers which keeps a liberal amount of money in circulation and insures a good price for milk as well as making money for the stock holders. Alfalfa is the back bone of the Salt River Valley and probably will be for the next five or six years when, the indications are, it will give way to the orange and small fruit industry. The hay is the very best feed obtainable. Haying weather exists here practically all the time, which feature will appeal to the alfalfa growers throughout the middle states, where rainfall so often interferes with the curing of the hay after it has been cut.

It is certain that ten acres of the twenty can be set aside for pasture and hay land

We Sell Lands Under the Great

Roosevelt Reservoir

In the

Salt River Valley

For climate and soil we know of no spot on earth more favored. Seed time and harvest last the year through. Alluvial soil averaging 40 to 50 feet in depth.

The cereals, fruits and vegetables of the North with the fruits, nuts and other crops of the South grow in profusion. Eleven tons per acre per annum of alfalfa hay has been produced. And this, the most nutritious forage plant known to man.

A remarkable system of irrigation is being completed by the Government. This sure water supply with a mild, frostless climate gives to the farmer control of all the factors that enter into the agricultural problem, giving large and sure results to the intelligent.

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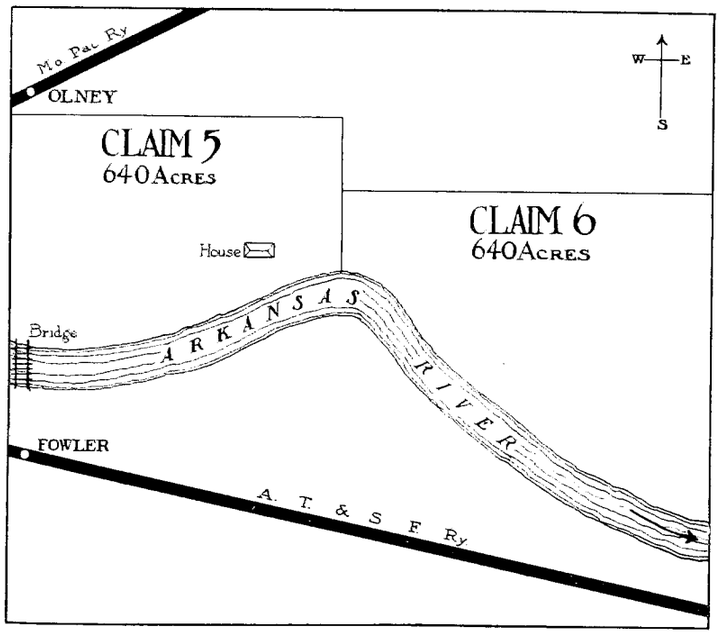

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17th National Irrigation Congress

Meets at Spokane, Washington, August 9 to 14, 1909

This will be the most important meeting of irrigation interests—national, state and individual—ever held in this country.

There will be more to interest and instruct the man who is looking forward to owning a home in an irrigated district, than has ever before been brought together in one place.

Notable men from this and foreign countries will be present — many of them to take an active part in the proceedings.

If you are at all interested in the development of the great West, you cannot afford to miss this meeting.

If you are interested in the conservation of the national resources of our country, you should by all means attend. A program of superlative interest has been arranged and the people of Spokane are prepared to entertain all visitors most royally.

If you will write to-day we will mail you full particulars about the Spokane meeting.

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with profit, but the real question is what to plant in the remaining ten acres in order to derive the best returns. There is the cantaloupe; Mesa is the home of the cantaloupe in the Valley. Nearly two hundred cars are shipped from here annually to Chicago for distribution. Growers, who have been in the business here for the past twelve years, have averaged enough every two years to pay for their land on which the crop was grown. Five acres in cantaloupes are enough for one man and three acres are enough for a beginner. There are a few things to learn about cantaloupe growing and especially the picking and packing which are to be gained by experience. The commission firm handling the melons advances the seed and crates which leaves only the expense of labor for the grower to meet. The only time when much additional labor is required is the picking season, and then 40 cents per standard crate is allowed on all melons accepted which covers all expense of additional help. The cantaloupe growers have an association with everyone growing cantaloupes eligible, upon the payment of a fee of $5, which insures the protection of the association.

The cultivation of the Thompson Seedless grape is another industry which is especially characteristic of Mesa. The Thompson is a raisin grape and was cultivated principally for raisins until a few years ago when the growers' association conceived the idea of shipping the fresh fruit to Chicago. They have been able to realize upwards of $100 to $150 per acre for the past three years, or since they have been shipping the fresh grapes. The grape industry has proved a paying one and it takes but three years to get a full bearing vineyard which will last for thirty years at least, that being the age of some of the vineyards at this place now. The grapes come off in the first part of July and continue until the middle of the month. At least three acres of our twenty should be planted to grapes.

The orange industry is the foreordained destiny of the Mesa section of the Salt River Valley. The soil, the climate, the conditions, in fact everything points conclusively toward the orange industry. Arizona oranges throughout the eastern markets demand the highest prices. For the past two years the oranges from this place have broken season records over strong competition. The fruit is the best, the production is exceptionally good and, furthermore, there are no pests of any kind whatever in the Salt River Valley to take the profits from the crop. The warm sun of summer matures the fruit to perfection and at the same time its bright light keeps down the scale and smut noticeable in sections where the weather is cloudy or the humidity greater. When the orange trees commence to bear, the land takes on a value of $500 per acre since the returns will practically amount to $4 per tree or approximately $400 per acre, which is within itself a neat annual income on five acres.

Then again the sugar-beets are a companion piece to the cantaloupe. This is a crop which matures earlier than the cantaloupe and requires less labor but with possibly smaller returns. The Southwestern Sugar and Land Company, an independent concern, has a large factory at Glendale, Arizona, in this Valley. A factory for Mesa is promised in the near future. There are this year between three and four hundred acres of sugar-beets in this section. The farmer delivers his crop at the scales, where they are automatically dumped in the cars and sent to the factory at a price of $4.75 per ton. At this price it is anticipated that this year's crop will bring to the growers in the neighborhood of $75 to $100 per acre.

Now with our twenty that we have in mind, we can arrange to have garden all winter—green peas every day throughout the winter months is not unusual. Roses bloom in the yards the year around and the pepper trees are ever green.

Then there is another industry which must be included and that is the poultry. No place in the world does poultry thrive better than in the dry climate of Arizona. Eggs sell throughout the winter months for 50 cents per dozen and through the spring for 25 cents and 30 cents per dozen. Turkeys are especially profitable.

Now if it has been made plain to "The Man From Back There" just how he can buy a twenty-acre tract and pay for it with his $2,000, there is another thing that must be taken into consideration. Every man owes it to himself and his family to live as he goes along. He also owes it to his children to furnish them an education and the privileges of church and Sunday school. In the matter of school laws Arizona has probably the best of any commonwealth in the Union. Her teachers are paid more than those in the eastern states and, as a result, the very best are secured. Mesa has just completed a $45,000 high school building. The curriculum includes a four years' course, which entitles its graduates to enter the Tempe normal school—a territorial institution only seven miles from Mesa or the territorial university at Tucson. An efficient corps of teachers is always maintained and the very latest methods are employed. As an example of this, a kitchen is provided in the basement of the high school building where the children may have warm lunches. A manual training department has been added also. The churches are presided over by able men, principally college graduates. Lecture courses are provided, and two opera houses in Mesa, one of them the largest in the Southwest, generally furnish the theatre-going public a variety of entertainment of high order. A rural route system is in successful operation. Over twenty miles of telephone wire is used in the rural system connecting one hundred or more phones with the city exchange. The highways are good every day in the year, making travel a pleasure. In fact, the country districts are only a continuation of the city streets. It is a hard matter to tell just where the town leaves off and the country begins.

The great Roosevelt reservoir is nearing completion and when that is done it will mean the manufacture of electricity for use by the ranchers as well as irrigation water to flow out over their fields and make them produce. With the electricity the interurban railway will dart here and there, up and down the long rows of trees skirting a cement-lined irrigating ditch and bordering the highways.

The entire Valley will then become as a single commonwealth and then, as now, Mesa will be one of the chosen spots.

That time is coming, and if you are still in the possession of the twenty-acre tract that you purchased at the beginning of this article, you will have it paid for and then you would not take three times $3,000 for it. And the man back there—still, will be wanting it, but he will not be able to buy it—at least not with the $2,000 in cash that you had when you came.

We gain freedom by giving it, and he who bestows faith gets it back with interest.

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If so, here is an opportunity to associate yourself with a number of Eastern men who are now developing a

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A beautifully illustrated book descriptive of the Springs and environs will be mailed to you free, on request. Address

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A String of Pearls.

For our dear ones safe on the other side
We give thee praise, O Lord!
Though our hearts are sore for prayers denied,
And our songs have a broken chord.
Never the stain of shame or sin,
Never the blight of pain,
Shall come to the blestwhohaveenteredin.
Where only love doth reign.

—*Margaret E. Sangster.*

THE UNITED STATES LAND and IRRIGATION EXPOSITION

Chicago Coliseum, November 20 to December 4

Under the auspices of the Chicago Tribune

Will be the first of its kind and will bring together exhibits of the greatest interest to thousands who are planning to make their homes in the West. The displays will furnish an accurate idea of the present marvellous development due to the reclamation of land and scientific methods of soil culture.

It will be open at the same time as the International Livestock Exposition and 500,000 people will come to Chicago for the double attraction. Special rates will be granted by all railroads.

In addition to the ample display of products there will be elaborate panoramas, and accurate models of all that pertains to the development of land in this country. The decorative features have been studied out by experts and will furnish an appropriate setting for the exhibits, which will be unique in character. Government officials are lending their support and will send to Chicago the valuable material shown at Seattle and at other large expositions.

The exhibits will show in miniature the wealth and charm of the West. A walk through the aisles will be equivalent to an extended trip to numerous fertile valleys, without delay, or possible discomfort.

Of Chicago's population, numbering more than 2,000,000, there is a large percentage who have wearied of the grind of city life. To all such the disclosures of what is possible by culture of the soil under new conditions will come as a revelation.

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When writing please mention The Earth.

Victory in Defeat.

BY EDWIN MARKHAM

Defeat may serve as well as victory
To shake the soul and let the glory out.
When the great oak is straining in the wind,
The boughs drink in new beauty, and the trunk
Sends down a deeper root on the windward side.
Only the soul that knows the mighty grief
Can know the mighty rapture. Sorrows come
To stretch out spaces in the heart for joy.

—*Nautilus.*

Sentence Sermons

The noblest work often lies nearest.

Only a putty life is afraid of being worn out.

The battle without goes as goes the battle within.

Duty has a stern face only when viewed askance.

Gifts to God can never make up for thefts from men.

He who honestly seeks to save another finds himself.

He never has a message who does not know how to listen.

The wastes of love bring greater riches than the wisdom of greed.

Lying lips are none the better for working in a prayer meeting.

A man's soul is to be measured by his sense of the souls of others.

You will not be able to rest in heaven if you practice resting here.

No duties are better done than those we do without thinking of duty.

Where every one has an ax to grind there will be little hewing to the line.

You cannot become one of the tools of the Infinite if you flee from His anvil.

—*Henry F. Cope.*

One of Many Irrigating Canals in the Fertile Salt River Valley of Arizona