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Free Lands

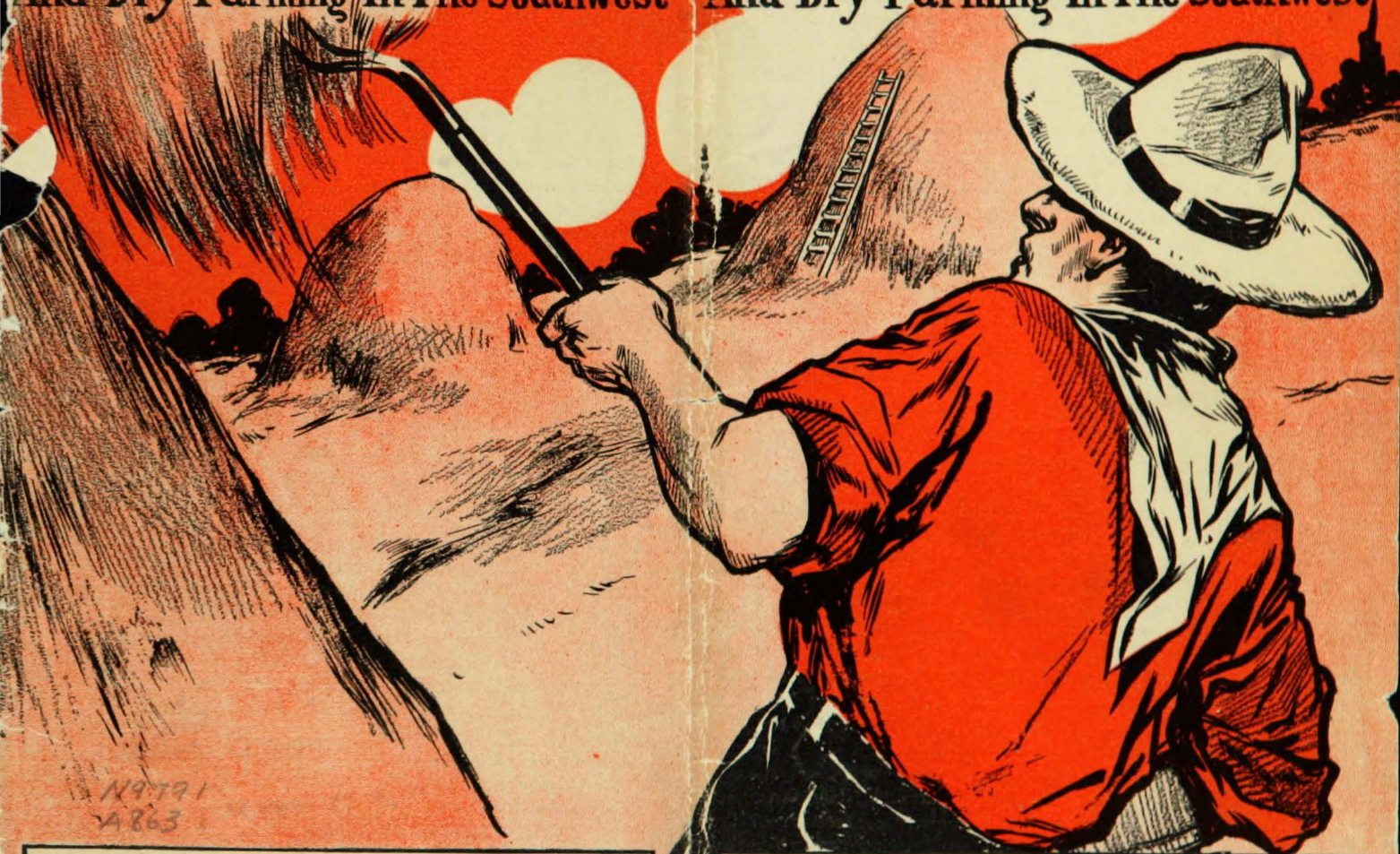
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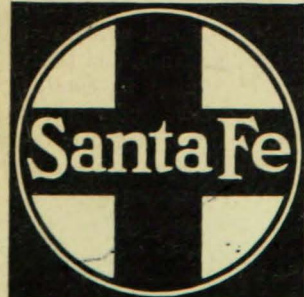
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And Dry Farming In The Southwest

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A Synopsis
of the
**Homestead and
Desert Land Laws**
of the
United States

Issued by
General Colonization Department
Atchison, Topeka & Santa Fe Ry.
CHICAGO



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PREFACE

Contrary to the generally accepted opinion, the Public Lands of the United States are not nearly exhausted, nor have all the valuable lands been appropriated.

In fact, the reverse is true. There are large areas of agricultural and grazing lands belonging to the Government which are abundantly watered by natural rainfall; also many millions of acres of arid lands heretofore regarded as valueless which may be brought to the highest state of productiveness and cultivation through the agency of irrigation.

In order to bring to the attention of the prospective homeseeker the many opportunities for securing a home on the Public Domain adjacent to the lines of the Santa Fe, the information contained in the following pages has been compiled.

It is hoped that the synopsis of the Homestead and Desert Land Laws which follows will sufficiently acquaint the prospec-

tive settler with the conditions under which he may secure a free home from Uncle Sam.

The information concerning the number of acres that may be obtained in the several States and Territories under the Homestead and Desert Land Laws has been carefully compiled from the latest Government statistics. This, together with a brief description of soil and general characteristics given should enable the prospective settler to determine for himself what section of the Great Southwest most appeals to him.

This once decided, the next step necessary is to personally visit and inspect the section in which it is proposed to found the new home. In order to make such trip of inspection as easily and cheaply as possible, and in order to secure the benefit of any reduced rates in effect at the time, it would be wise for the home-seeker to address the undersigned, who will be pleased to furnish him with complete information about the journey, and mail descriptive printed matter about the country.

C. L. SEAGRAVES, General Colonization Agent

A. T. & S. F. Ry. Co.

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THE FREE LANDS LAW

Homesteads

1. Persons desiring to make homestead entries should first fully inform themselves as to the character and quality of the lands they desire to enter, and should in no case apply to enter until they have visited and fully examined each legal subdivision for which they make application, as satisfactory information as to the character and occupancy of public lands cannot be obtained in any other way.

As each applicant is required to swear that he is well acquainted with the character of the land described in his application, and as all entries are made subject to the rights of prior settlers, the applicant cannot make the affidavit that he is acquainted with the character of the land, or be sure that the land is not already appropriated by a settler, until after he has actually inspected it.

Information as to whether a particular tract of land is subject to entry may be obtained from the register or receiver of the land district in which the tract is located, either through verbal or written inquiry, but these officers must not be expected to give information as to the character and quality of unentered land or to furnish extended lists of lands subject to entry, except through plats and diagrams which they are authorized to make and sell as follows:

For a township diagram showing entered land only.....\$1.00
For a township plat showing form of entries, names of claimants, and character of entries..... 2.00
For a township plat showing form of entries, names of claimants, character of entry, and number..... 3.00

For a township plat showing form of entries, names of claimants, character of entry, number, and date of filing or entry, together with topography, etc..... 4.00

A list showing the general character of all the public lands remaining unentered in the various counties of the public land States on the 30th day of the preceding June may be obtained at any time by addressing "The Commissioner of the General Land Office, Washington, D. C."

All blank forms of affidavits and other papers needed in making application to enter or in making final proofs can be obtained by applicants and entrymen from the land office for the district in which the land lies.

2. Kind of Lands Subject to Homestead Entry.—All unappropriated surveyed public lands are subject to homestead entry if they are not mineral or saline in character and are not occupied for the purposes of trade or business and have not been embraced within the limits of any withdrawal, reservation, or incorporated town or city; but homestead entries on lands within certain areas (such as lands in Alaska, and lands withdrawn under the reclamation act, certain ceded Indian lands, and lands within abandoned military reservations, etc.) must be entered subject to the particular requirement of the laws under which such lands were opened to entry. None of these particular requirements are set out in these suggestions, but information as to them may be obtained by either verbal or written inquiries addressed to the register and receiver of the land office of the district in which such lands are situated.

How Claims Under the Homestead Law Originate

3. Claims under homestead laws may be initiated either by settlement on surveyed or unsurveyed lands of the kind mentioned in the foregoing paragraphs, or by the filing of a soldier's or sailor's declaratory statement, or by the presentation of an application to enter any unsurveyed lands of that kind.

4. Settlements may be made under the homestead laws by all persons qualified to make either an original or a second homestead entry of the kind mentioned in paragraphs 6 and 13, and in order to make settlement the settler must personally go upon and improve or establish residence on the land he desires. By making settlement in this way, the settler gains an exclusive right to enter the lands settled upon as against all other persons, but not as against the Government should the lands be withdrawn by it for other purposes.

A settlement made on any part of a surveyed technical quarter section gives the settler the right to enter all of that quarter section which is then subject to settlement, although he may not place improvements on each 40-acre subdivision; but if the settler desires to initiate a claim to surveyed tracts which form a part of more than one technical quarter section he should perform some act of settlement—that is, make some improvement—on each of the smallest legal subdivisions desired. When settlement is made on unsurveyed lands, the settler must plainly mark the boundaries of all the lands claimed by him.

Settlement must be made by the settler in person and cannot be made by his agent, and each settler must, within a reasonable time after making his settlement, establish and thereafter continuously maintain an actual residence on the land, and if he, or his heirs or devisees, fail to do this, or if he, or his widow, heirs or devisees, fail to make entry within three months from the time he first settles on surveyed lands, or within three months from the filing in the local land office of the plat of the survey of unsurveyed lands on which he made settlement, the exclusive right of making entry of the lands settled on will be lost and the lands will become subject to entry by the first qualified applicant.

5. Soldier's and sailor's declaratory statements may be filed in the land office for the district in which the lands desired are located by any persons who have been honorably discharged after ninety days' service in the Army or Navy of the United States during the War of the Rebellion or during the Spanish-American War or the Philippine insurrection. Declaratory statements of this character may be filed either by the soldier or sailor in person or through his agent acting under a proper power of attorney, but the soldier or sailor must make entry of the land in person, and not through his agent, within six months from the filing of his declaratory statement, or he may make entry in person without first filing a declaratory statement if he so chooses. The application to enter may be presented to the land office through the mails or otherwise, but the declaratory statement must be presented at the land office in person, either by the soldier or sailor, or by his agent, and cannot be sent through the mails.

By Whom Homestead Entries May Be Made

6. Homestead entries may be made by any person who does not come within either of the following classes:

- (a) Married women, except as hereinafter stated.
- (b) Persons who have already made homestead entry, except as hereinafter stated.
- (c) Foreign-born persons who have not declared their intention to become citizens of the United States.
- (d) Persons who are the owners of more than 160 acres of land in the United States.
- (e) Persons under the age of 21 years who are not heads of families, except minors who make entry as heirs, as hereinafter mentioned, or who have served in the Army or Navy for at least fourteen days.
- (f) Persons who have acquired title to or are claiming under any of the agricultural public land laws, through settlement or entry made since August 30, 1890, any other lands which, with the lands last applied for, would amount in the aggregate to more than 320 acres.

7. A married woman, who has all of the other qualifications of a homesteader, may make a homestead entry under any one of the following conditions:

- (a) Where she has been actually deserted by her husband.
 - (b) Where her husband is incapacitated by disease or otherwise from earning a support for his family and the wife is really the head and main support of the family.
 - (c) Where the husband is confined in a penitentiary and she is actually the head of the family.
 - (d) Where the married woman is the heir of a settler or contestant who dies before making entry.
 - (e) Where a married woman made improvements and resided on the lands applied for before her marriage, she may enter them after marriage if her husband is not holding other lands under an unperfected homestead entry at the time she applies to make entry.
- A married woman cannot make entry under any of these conditions unless the laws of the State where the lands applied for are situated give her the right to acquire and hold title to lands as a femme sole.

8. If an entryman deserts his wife and abandons the land covered by his entry, his wife then has the exclusive right to contest the entry if she has continued to reside on the land, and on securing its cancellation she may enter the land in her own right, or she may continue her residence and make proof in the name of and as the agent of her husband, and patent will issue to him.

9. If an entryman deserts his minor children and abandons his entry after the death of his wife, the children have the same rights the wife could have exercised had she been deserted during her lifetime.

10. If a husband and wife are each holding an original entry or a second entry at the same time, they must relinquish one of the entries, unless one of them holds an entry as the heir of a former entryman or settler. In cases where they cannot hold

Conditions on which additional entry may be made

both entries, they must elect which one they will retain and relinquish the other.

11. *A widow*, if otherwise qualified, may make a homestead entry notwithstanding the fact that her husband made an entry, and notwithstanding she may be at the time claiming the unperfected entry of her deceased husband.

12. Any person serving in the Army or Navy of the United States may make a homestead entry if some member of his family is residing on the lands applied for, and the application and accompanying affidavits may be executed before the officer commanding the branch of the service in which he is engaged.

13. Second homestead entries may be made, under statutes specifically authorizing such entries by the following classes of persons, if they are otherwise qualified to make entry:

(a) By a former entryman who commuted his entry prior to June 5, 1900.

(b) By homestead entryman who, prior to May 17, 1900, paid for lands to which they would have been afterwards entitled to receive a patent without payment, under the "Free Homes Act."

(c) By any person who for any cause lost, forfeited or abandoned his homestead entry before February 8, 1908, if the former entry was not canceled for fraud or relinquished for a valuable consideration.

(d) Any person who has already made final proof for less than 160 acres under the homestead laws may, if he is otherwise qualified, make a second or additional homestead entry for such an amount of public lands as will, when added to the land for which he has already made proof, not exceed in the aggregate 160 acres.

Any person desiring to make a second entry must first select and inspect the land he intends to enter and then make application therefor on blanks furnished by the register and receiver. Each application must state the date and number of his former entry and the land office at which it was made, or give the section, township, and range in which the land entered was located. Any person mentioned in paragraph (c) above must show, by the oaths of himself and some other person or persons, the time when his former entry was lost, forfeited or abandoned and that it was not canceled for fraud or abandoned or relinquished for a valuable consideration.

14. An additional homestead entry may be made by a person for such an amount of public lands adjoining lands then held and resided upon by him under his original entry as will, when added to such adjoining lands, not exceed in the aggregate 160 acres. An entry of this kind may be made by any person who has not acquired title to and is not, at the date of his application, claiming under any of the agricultural public land laws, through a settlement or entry made since August 30, 1890, any other lands which, with the lands then applied for, would exceed in the aggregate 320 acres; but the applicant will not be required to show any of the other qualifications of a homestead entryman.

15. An adjoining farm entry may be made for such an amount of public lands lying contiguous to lands owned and resided upon by the applicant as will not, with the lands so

owned and resided upon, exceed in the aggregate 160 acres; but no person will be entitled to make entry of this kind who is not qualified to make an original homestead entry. A person who has made one homestead entry, although for a less amount than 160 acres, and perfected title thereto is not qualified to make an adjoining farm entry.

How Homestead Entries Are Made

16. A homestead entry may be made by the presentation to the land office of the district in which the desired lands are situated of an application properly prepared on blank forms prescribed for that purpose and sworn to before either the Register or the Receiver, or before a United States Commissioner, or a United States Court Commissioner, or a judge or a clerk of a court of record, in the county or parish in which the land lies, or before any officer of the classes named who resides in the land district and nearest and most accessible to the land, although he may reside outside of the county in which the land is situated.

17. Each application to enter and the affidavits accompanying it must recite all the facts necessary to show that the applicant is acquainted with the land; that the land is not, to the applicant's knowledge, either saline or mineral in character; that the applicant possesses all of the qualifications of a homestead entryman; that the application is honestly and in good faith made for the purpose of actual settlement and cultivation, and not for the benefit of any other person, persons, or corporation; that the applicant will faithfully and honestly endeavor to comply with the requirements of the law as to settlement, residence, and cultivation necessary to acquire title to the land applied for; that the applicant is not acting as the agent of any person, persons, corporation, or syndicate in making such entry, nor in collusion with any person, corporation or syndicate to give them the benefit of the land entered or any part thereof; that the application is not made for the purpose of speculation, but in good faith to obtain a home for the applicant, and that the applicant has not directly or indirectly made, and will not make, any agreement or contract in any way or manner with any person or persons, corporation, or syndicate whatsoever by which the title he may acquire from the Government to the lands applied for shall inure, in whole or in part, to the benefit of any person except himself.

18. All applications to make second homestead entries must, in addition to the facts specified in the preceding paragraph, show the number and date of the applicant's original entry, the name of the land office where the original entry was made, and the description of the land covered by it, and it should state fully all of the facts which entitle the applicant to make a second entry.

19. All applications by persons claiming as settlers must, in addition to the facts required in paragraph 21, state the date and describe the acts of settlement under which they claim a preferred right of entry, and applications by the widows, devisees, or heirs of settlers must state facts showing the death of the settler and their right to make entry; that the settler was qualified to make entry at the time of his death, and that the

Receipts from Government land can be used for its improvement

heirs or devisees applying to enter are citizens of the United States, or have declared their intentions to become such citizens, but they are not required to state facts showing any other qualifications of a homestead entryman, and the fact that they have made a former entry will not prevent them from making an entry as such heirs or devisees, nor will the fact that a person has made entry as their heir or devisee of the settler prevent him from making an entry in his own individual right, if he is otherwise qualified to do so.

20. All applications by soldiers, sailors, or their widows, or the guardians of their minor children, should be accompanied by proper evidence of the soldier's or sailor's service and discharge, and of the fact that the soldier or sailor had not, prior to his death, made an entry in his own right. The application of the widow of the soldier or the sailor must also show that she has remained unmarried, and applications for children of soldiers or sailors must show that the father died without having made entry; that the mother died or remarried without making entry, and that the person applying to make entry for them is their legally appointed guardian.

Rights of Heirs Under the Homestead Laws

21. If a homestead settler dies before he makes entry, his widow has the exclusive right to enter the lands covered by his settlement, and if there be no widow, then any person to whom he has devised his settlement rights by proper will has the exclusive right to make the entry; but if a settler dies leaving neither widow nor will, then the right to enter the lands covered by his settlement passes to the persons who are named as his heirs by the laws of the State in which the land lies. The persons to whom the settler's right of entry passes must make entry within the time named in paragraph 4 or they will forfeit their rights to the next qualified applicant. They may, however, make entry after that time if no other qualified person has applied to enter the lands.

22. If a homestead entryman dies before making final proof his rights under his entry will pass to his widow; or if there be no widow, and the entryman's children are all minors, the right to a patent vests in them upon making publication of notice and proof of the death of the entryman without a surviving widow, that they are the only minor children and that there are no adult heirs of the entryman, or the land may be sold for the benefit of such minor children in the manner in which other lands belonging to minors are sold under the laws of the State or Territory in which the lands are located.

If the children of a deceased entryman are not all minors and his wife is dead, his rights under his entry pass to the person to whom such rights were devised by the entryman's will, or if an entryman dies without leaving either a widow or a will, and his children are not all minors, his rights under his entry will pass to the persons who are his heirs under the laws of the State or Territory in which the lands are situated.

23. If a contestant dies after having secured the cancellation of an entry, his right as a successful contestant to make entry passes to his heirs; and if the contestant dies before he has secured the cancellation of the entry he has contested, his heirs

may continue the prosecution of his contest and make entry if they are successful in the contest. In either case to entitle the heirs to make entry they must show that the contestant was a qualified entryman at the date of his death; and in order to earn a patent the heirs must comply with all the requirements of the law under which the entry was made to the same extent as would have been required of the contestant had he made the entry.

No foreign-born persons can claim rights as heirs under the homestead laws unless they have become citizens of the United States or have declared their intentions to become citizens.

24. *The unmarried widow, or in case of her death or remarriage, the minor children of soldiers and sailors* who were honorably discharged after ninety days' actual service during the war of the rebellion, the Spanish-American war, or the Philippine insurrection may make entry as such widow or minor children if the soldier or sailor died without making entry. The minor children must make a joint entry through their duly appointed guardian. The making of an entry by the widow or minor children of a soldier or sailor exhausts their rights under the general homestead law.

Residence and Cultivation

25. The residence and cultivation required by the homestead law means a continuous maintenance of an actual home on the land entered to the exclusion of a home elsewhere, and continuous annual cultivation of some portion of the land. A mere temporary sojourn on the land, followed by occasional visits to it once in six months or oftener, will not satisfy the requirements of the homestead law, and may result in the cancellation of the entry.

26. No specified amount of either cultivation or improvements is required, but there must in all cases be such continuous improvement and such actual cultivation as will show the good faith of the entryman. Lands covered by homestead entry may be used for grazing purposes if they are more valuable for pasture than for cultivation to crops. When lands of this character are used in good faith for pasturage, actual grazing will be accepted in lieu of actual cultivation. The fact that lands covered by homestead entries are of such a character that they cannot be profitably cultivated or pastured will not be accepted as an excuse for failure to either cultivate or graze them.

27. Actual residence on the lands entered must begin within six months from the date of all homestead entries, except additional entries and adjoining farm entries of the character mentioned in paragraphs 14 and 15 and residence with improvements and annual cultivation must continue until the entry is five years old, except in cases hereafter mentioned, but all entrymen who actually resided upon and cultivated lands entered by them prior to making such entries may make final proof at any time after entry when they can show five years' residence and cultivation.

Under certain circumstances, leaves of absence may be granted in the manner pointed out in paragraph 36 of these suggestions,

An entryman fully complying with law not required to live on land

but the entryman cannot claim credit for residence during the time he is absent under such leave.

An extension of time for establishing residence can be granted only in cases where the entryman is actually prevented by climatic hindrances from establishing his residence within the required time. This extension cannot be granted in advance; but on making final proof or in case a contest is instituted against the entry the entryman may show the storms, floods, blockades of snow or ice, or other climatic reasons which rendered it impossible for him to commence residence within six months from the date of entry, and he must as soon as possible after the climatic hindrances disappear establish his residence on the land entered. Failure to establish residence within six months from date of entry will not necessarily result in a forfeiture of the entry, provided the residence be established prior to the intervention of an adverse claim.

After an entryman has fully complied with the law and has submitted proof he is no longer required to live on the land. But all entrymen should understand that if they discontinue their residence on the land prior to the issuance of patent they do so at their risk, and by so doing they may place themselves in such a position that they may be unable to comply with requirements made by the General Land Office, should their proof on examination there be found unsatisfactory.

28. Residence and cultivation by soldiers and sailors of the classes mentioned in paragraph 5 must begin within six months from the time they file their declaratory statements regardless of the time when they make entry under such statement, but if they make entry without filing a declaratory statement they must begin their residence within six months from the date of such entry, and residence thus established must continue in good faith, with improvements and annual cultivation for at least one year, but after one year's residence and cultivation the soldier or sailor is entitled to credit on the remainder of the five-year period for the term of his actual naval or military service, or if he was discharged from the Army or Navy because of wounds received or disabilities incurred in the line of duty he is entitled to credit for the whole term of his enlistment. No credit can be allowed for military service where commutation proof is offered.

29. A soldier or sailor making entry during his enlistment in time of peace is not required to reside personally on the land, but may receive patent if his family maintain the necessary residence and cultivation until the entry is five years old or until it has been commuted, but a soldier or sailor is not entitled to credit on account of his military service in time of peace.

30. Widows and minor orphan children of soldiers and sailors who make entry as such widows and children must begin their residence and cultivation on the lands entered by them within six months from the date of entries, or the filing of declaratory statements, and thereafter continue both residence and cultivation for such period as will, when added to the time of their husbands' or fathers' military or naval service, amount to five years from the date of the entry, and if the husbands or fathers either died in the service or were discharged on account of

wounds or disabilities incurred in the line of duty, credit for the whole term of their enlistment, not to exceed four years, may be taken, but no patent will issue to such widows or children until there has been residence and cultivation by them for at least one year. No credit can be allowed for military service where commutation proof is offered.

31. Persons who make entry as heirs of settlers are not required to both reside upon and cultivate the land entered by them, but they must, within six months from the dates of their entries, begin and thereafter continuously maintain either residence or cultivation on the land entered by them for such a period of time as, added to the time during which the settler resided on and cultivated the land, will make five years, unless their entries be sooner commuted. Commutation proof cannot, however, be made unless at least fourteen months' actual residence is shown, performed either by the settler or the heirs or in part by the settler and in part by the heirs.

32. The widow, heirs, or devisees of a homestead entryman who dies before he earns patent are not required to both reside upon and cultivate the lands covered by his entry, but they must, within six months after the death of the entryman, begin either residence or cultivation on the land covered by his entry, and thereafter continuously maintain either residence or cultivation for such a period of time as will, when added to the time during which the entryman complied with the law, amount in the aggregate to the required five years, unless they sooner commute the entry. But commutation proof cannot be made unless fourteen months' actual residence can be shown, performed by the entryman or by the widow, heirs, or devisees, or in part by the entryman and in part by the widow, heirs or devisees.

33. Homestead entrymen who have been elected or appointed to either a Federal, State, or county office after they have made entry and established an actual residence on the land covered by their entries are not required to continue such residence during their term of office, if the discharge of their *bona fide* official duties necessarily requires them to reside elsewhere than upon the land; but they must continue their cultivation and improvements for the required length of time.

A person who makes entry after he has been elected or appointed to office is not excused from maintaining residence, but must comply with the law in the same manner as though he had not been elected or appointed.

34. Residence is not required on lands covered by an adjoining farm entry of the kind mentioned in paragraph 15; but a person who makes an adjoining farm entry is not entitled to a patent until he has continued his residence and cultivation for the full five years, on the adjoining lands owned by him at the time he made entry, or on the lands entered by him, unless he sooner commutes his entry after fourteen months' residence on either the entered lands or the adjoining lands owned by him. A person who has made an additional entry for lands adjoining his original entry (see paragraph 14) is not entitled to a patent to the lands so entered until he can show five years' residence either on the original entry, or in part on the original and in part on the additional.

Leave of absence for one year may be granted

35. Neither residence nor cultivation by an insane homestead entryman is necessary if such entryman made entry before he became insane and complied with the requirements of the law up to the time his insanity began.

Leaves of Absence

36. Leaves of absence for one year or less may be granted to entrymen who have established actual residence on the lands entered by them in all cases where total or partial failure or destruction of crops, sickness, or other unavoidable casualty has prevented the entryman from supporting himself and those dependent upon him by a cultivation of the land.

Applications for leaves of absence should be addressed to the Register and Receiver of the land office where the entry was made, and should be sworn to by the applicant and some other disinterested person before such Register or Receiver or before some officer in the land district, using a seal and authorized to administer oaths, except in cases where through age, sickness, or extreme poverty the entryman is unable to visit the district for that purpose, when the oath may be made outside of the land district. All applications of this kind should clearly set forth:

(a) The number and date of the entry, a description of the lands entered, the date of the establishment of his residence on the land, and the extent and character of the improvements and cultivation made by the applicant.

(b) The kind of crops which failed or were destroyed and the cause and extent of such failure or destruction.

(c) The kind and extent of the sickness, disease, or injury assigned, and the extent to which the entryman was prevented from continuing his residence upon the land, and, if practicable, a certificate signed by a reliable physician, as to such sickness, disease, or injury, should be furnished.

(d) The character, cause, and extent of any unavoidable casualty which may be made the basis of the application.

(e) The dates from which and to which the leave of absence is requested.

Commutation of Homestead Entries

37. All original, second, and additional homestead, and adjoining farm entries may be commuted, except such entries as are made under particular laws which forbid their commutation.

When actual residence was established within six months from the date of any entry made before November 1, 1907, and thereafter continuously maintained with improvements and cultivation until the expiration of fourteen months from the date of the entry and in cases where there has been at least fourteen months' actual and continuous residence and cultivation on any land covered by any entry made after November 1, 1907, the entryman or his widow, heirs, or devisees may obtain patent by proving such residence and cultivation and paying the cost of such proof, the land office fees, and the price of the land, which is \$1.25 per acre outside of the limits of railroad grants and \$2.50 per acre for land within the granted

limits, except as to certain lands which were opened under statutes requiring payment of a price different from that here mentioned.

Homestead Final and Commutation Proof

38. Either final or commutation proof may be made at any time when it can be shown that residence and cultivation have been maintained in good faith for the required length of time, but if final proof is not made within seven years from the date of a homestead entry the entry will be canceled unless some good excuse for the failure to make proof within the seven years is given with satisfactory final proof as to the required residence and cultivation made after the expiration of the seven years.

39. *By whom proof may be offered.*—Final proof must be made by the entrymen themselves, or by their widows, heirs, or devisees, and cannot be made by their agents, attorneys in fact, administrators, or executors, except in the cases herein-after mentioned. In order to submit final five-year proof the entryman, his widow, or the heir or devisee submitting proof must be a citizen of the United States. As a general rule commutation proof may be submitted by one who has declared his or her intention to become a citizen, but on entries made for land in certain reservations opened under special acts the person submitting commutation proof must be a citizen of the United States.

(a) If an entryman becomes insane after making his entry, patent will issue to the entryman on proof by his guardian, or other legal representative, that the entryman had complied with the law up to the time his insanity began.

(b) If a person has made a homestead entry and afterwards died while he was serving as a soldier or a sailor during the Spanish-American War or the Philippine insurrection, patent will issue upon proof made by his widow, if unmarried, or in case of her death or marriage, then his minor orphan children, or his, her, or their legal representatives.

(c) Where entries have been made for minor orphan children of soldiers or sailors, proof may be offered by their guardian, if any, if the children are still minors at the time the proof should be made.

(d) When an entryman has abandoned the land covered by his entry, and deserted his wife, she may make final or commutation proof as his agent, or, if his wife be dead and the entryman has deserted his minor children, they may make the same proof as his agent, and patent will issue in the name of the entryman.

(e) When an entryman dies leaving children, all of whom are minors, and both parents are dead, the executor or administrator of the entryman, or the guardian of the children, may, at any time within two years after the death of the surviving parent, sell the land for the benefit of the children by proper proceedings in the proper local court, and patent will issue to the purchaser; but if the land is not so sold patent will issue to the minors upon proof of death, heirship, and minority being made by such administrator or guardian.

The Enlarged Homestead Act

40. How proofs may be made.—Final or commutation proofs may be made before any of the officers mentioned in paragraph 16, as being authorized to administer oaths to applicants.

Any person desiring to make homestead proof should first forward a written notice of his desire to the Register and Receiver of the land office, giving his postoffice address, the number of his entry, the name and official title of the officer before whom he desires to make proof, the place at which the proof is to be made, and the name and postoffice addresses of at least four of his neighbors who can testify from their own knowledge as to facts which will show that he has in good faith complied with all the requirements of the law.

41. *Publication fees.*—Applicants shall hereafter be required to make their own contracts for publishing notice of intention to make proof, and they shall make payment therefor directly to the publishers, the newspaper being designated and the notice prepared by the register.

42. *Duty of Officers Before Whom Proofs Are Made.*—On receipt of the notice mentioned in the preceding paragraph, the Register will issue a notice naming the time, place, and officer before whom he proof is to be made and cause the same to be published once a week for five consecutive weeks in a newspaper of established character and general circulation published nearest the land, and also post a copy of the notice in a conspicuous place in his office.

On the day named in the notice the entryman must appear before the officer designated to take proof with at least two of the witnesses named in the notice; but if for any reason the entryman and his witnesses are unable to appear on the date named, the officer should continue the case from day to day until the expiration of ten days, and the proof may be taken on any day within that time when the entryman and his witnesses appear, but they should, if it is at all possible to do so, appear on the day mentioned in the notice. Entryman are advised that they should, whenever it is possible to do so, offer their proofs before the Register or Receiver, as it may be found necessary to refer all proofs made before other officers to a special agent for investigation and report before patent can issue, while, if the proofs are made before the Register or Receiver, there is less likelihood of this being done, and there is less probability of the proofs being incorrectly taken. By making proof before the Register or Receiver the entryman will also save the fees which they are required to pay other officers, as they will be required under the law to pay the Register and Receiver the same amount of fees in each case, regardless of the fact that proof may have been taken before some other officer.

Entrymen are cautioned against improvidently and improperly commuting their entries, and are warned that any false statement made in either their commutation or final proof may result in their indictment and punishment for the crime of perjury.

43. *Fees and Commissions.*—When a homesteader applies to make entry he must pay in cash to the receiver a fee of \$5 if his entry is for 80 acres or less, or \$10 if he enters more than 80 acres, and in addition to this fee he must pay, both at the time

he makes entry and final proof a commission of \$1 for each 40-acre tract entered outside of the limits of a railroad grant and \$2 for each 40-acre tract entered within such limits. On all final proofs made before either the Register or the Receiver or before any other officer authorized to take proofs, the Register and Receiver are entitled to receive 15 cents for each one hundred words reduced to writing, and no proof can be accepted or approved until all fees have been paid.

In all cases where lands are entered under the homestead laws in Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming the commission due to the Register and Receiver on entries and final proofs, and the testimony fees under final proofs, are 50 per cent more than those above specified, but the entry fee of \$5 or \$10, as the case may be, remains the same in all the States.

United States Commissioners, United States Court Commissioners, judges and clerks are not entitled to receive a greater sum than 25 cents for each oath administered by them, except that they are entitled to receive \$1 for administering the oath to each entryman and each final proof witness to final proof testimony, which has been reduced to writing by them.

THE ENLARGED HOMESTEAD ACT

Homestead Entries for 320 Acres—Kind of Land Subject to Such Entry

1. The first section of the act provides for the making of homestead entry for an area of 320 acres, or less, of non-mineral, non-timbered, non-irrigable public land in the States of Colorado, Montana, Nevada, Oregon, Utah, Washington, Wyoming, and in the Territories of Arizona and New Mexico.

The term "non-irrigable land," as used in this act, is construed to mean land which, as a rule, lacks sufficient rainfall to produce agricultural crops without the necessity of resorting to unusual methods of cultivation, such as the system commonly known as "dry farming," and for which there is no known source of water supply from which such land may be successfully irrigated at a reasonable cost.

Therefore, lands containing merchantable timber, mineral lands, and lands within a reclamation project, or lands which may be irrigated at a reasonable cost from any known source of water supply, may not be entered under this act. Minor portions of a legal subdivision susceptible of irrigation from natural sources, as, for instance, a spring, will not exclude such subdivision from entry under this act, provided, however, that no entry shall embrace in the aggregate more than 40 acres of such irrigable lands.

Designation or Classification of Lands— Applications to Enter

2. From time to time lists designating the lands which are subject to entry under this act will be sent the Registers and Receivers, and immediately upon receipt of such lists they will

note upon the tract books opposite the tracts so designated, "Designated, Act February 19, 1909." Until such lists have been received in their office, no applications to enter will be received and no entries allowed under this act, but after the receipt of such lists it will be competent for them to dispose of applications for lands embraced therein under the provisions of this act, in like manner as other applications for public lands, without first submitting them to the General Land Office for consideration.

Compactness—Fees

3. Lands entered under this act must be in a reasonably compact form, and in no event exceed $1\frac{1}{2}$ miles in length.

The act provides that the fees shall be the same as those now required to be paid under the homestead laws; therefore, while the fees may not in any one case exceed the maximum fee of \$10, required under the general homestead law, the commissions will be determined by the area of land embraced in the entry.

Form of Application

4. Applications to enter must be submitted upon affidavit, Form No. 4—003.

Additional Entries

5. Section 3 of the act provides that any homestead entryman of lands of the character described in the first section of the act, upon which entry final proof has not been made, may enter such other lands, subject to the provisions of this act, contiguous to the former entry, which shall not, together with the lands embraced in the original entry, exceed 320 acres, and that residence upon and cultivation of the original entry shall be accepted as equivalent to residence upon and cultivation of the additional entry.

This section contemplates that lands heretofore entered may be classified or designated by the Secretary of the Interior as falling within the provisions of this act and in such cases an entryman of such lands who had not, at the date of the act, made final proof, may make such additional entry, provided he is otherwise qualified. Applicants for such additional entries must, of course, tender the proper fees and commissions and must make application and affidavit on Form No. 4—004. Entryman who made final proof on the original entries prior to the date of the act are not entitled to make additional entries under this act.

Final Proofs on Original and Additional Entries—Commutation Not Allowed

6. Final proofs must be made as in ordinary homestead cases, and in addition to the showing required of ordinary homestead entrymen it must be shown that at least one-eighth of the area embraced in each entry has been continuously cultivated to agricultural crops other than native grasses, beginning with the second year of the entry, and that at least one-fourth of the area embraced in the entry has been continuously cultivated to

agricultural crops other than native grasses, beginning with the third year of the entry and continuing to date of final proof.

Final proof submitted on an additional entry must show that the area of such entry required by the act to be cultivated has been cultivated in accordance with such requirement; or that such part of the original entry as will, with the area cultivated in the additional entry, aggregate the required proportion of the combined entries, has been cultivated in the manner required by the act.

Proof must be made on the original entry within the statutory period of seven years from the date of the entry; and if it cannot be shown at that time that the cultivation has been such as to satisfy the requirements of the act as to both entries it will be necessary to submit supplemental proof on the additional entry at the proper time. But proof should be made at the same time to cover both entries in all cases where the residence and cultivation are such as to meet the requirements of the act.

Commutation of either original or additional entry, made under this act, is expressly forbidden.

Right of Entry

7. Homestead entries under the provisions of section 2289 of the Revised Statutes, for 160 acres or less, may be made by qualified persons within the States and Territories named upon lands subject to such entry, whether such lands have been designated under the provisions of his act or not. But those who make entry under the provisions of this act cannot afterwards make homestead entry under the provisions of the general homestead law, nor can an entryman who enters under the general homestead law lands designated as falling within the provisions of this act afterwards enter any lands under this act.

A person who has, since August 30, 1890, entered and acquired title to 320 acres of land under the agricultural land laws (which is construed to mean the timber and stone, desert-land, and homestead laws) is not entitled to make entry under this act; neither is a person who has acquired title to 160 acres under the general homestead law entitled to make another homestead entry under this act, unless he comes within the provisions of section 3 of the act providing for additional entries of contiguous lands, or unless entitled to the benefits of section 2 of the act of June 5, 1900 (31 Stat., 267), or section 2 of the act of May 22, 1902 (32 Stat., 203).

If, however, a person is a qualified entryman under the homestead laws of the United States, he may be allowed to enter 320 acres under this act, or such a less amount as when added to the lands previously entered or held by him under the agricultural land laws shall not exceed in the aggregate 480 acres.

Constructive Residence Permitted on Certain Lands in Utah

8. The sixth section of the act under consideration provides that not exceeding 2,000,000 acres of land in the State of Utah, which do not have upon them sufficient water suitable for domestic purposes as will render continuous residence upon such

Quantity of land that may be acquired

lands possible, may be designated by the Secretary of the Interior as subject to entry under the provisions of this act; with the exception, however, that entrymen of such lands will not be required to prove continuous residence thereon. The act provides in such cases that all entrymen must reside within such distance of the land entered as will enable them successfully to farm the same as required by the act; and no attempt will be made at this time to determine how far from the land an entryman will be allowed to reside, as it is believed that a proper determination of that question will depend upon the circumstances of each case.

Applications to enter under this section of the act will not be received until lists designating or classifying the lands subject to entry thereunder have been filed and noted in the local land offices. Such lists will be from time to time furnished the Registers and Receivers, who will immediately upon their receipt note upon the tract books opposite the tract so listed the words, "Designated, section 6, act February 19, 1909." Stamps for making the notations required by these instructions will be hereafter furnished the local officers. Applications under this section must be submitted upon Form 4-003.

Final Proofs on Entries Allowed Under Section 6—Residence—Commutation Not Allowed

9. The final proof under this section must be made as in ordinary homestead entries, except that proof of residence on the land will not be required, in lieu of which the entryman will be required to show that from the date of original entry until the time of making final proof he resided within such distance from said land as enabled him to successfully farm the same. Such proof must also show that not less than one-eighth of the entire area of the land entered was cultivated during the second year; not less than one-fourth during the third year; and not less than one-half during the fourth and fifth years after entry.

Officers Before Whom Application and Proofs May Be Made

10. The act provides that any person applying to enter land under the provisions thereof shall make and subscribe before the proper officer an affidavit, etc. The term "proper officer," as used herein, is held to mean any officer authorized to take affidavits or proof in homestead cases.

DESERT LAND LAWS

Definition of Desert Lands

2. Lands which produce native grasses sufficient in quantity, if unfed by grazing animals, to make an ordinary crop of hay in usual seasons, are not desert lands. Lands which will produce an agricultural crop of any kind in amount to make the cultivation reasonably remunerative are not desert. Lands contain-

ing sufficient moisture to produce a natural growth of trees are not to be classed as desert lands.

While lands which border upon streams, lakes, and other bodies of water, or through or upon which there is any stream, body of water, or living spring, may not produce agricultural crops without irrigation, such lands are not subject to entry under the desert-land laws until the clearest proof of their desert character is furnished.

States in Which Desert-Land Entries May Be Made

3. Desert-land entries may be made only in the States of California, Colorado, Idaho, Montana, Nevada, North Dakota, Oregon, South Dakota, Utah, Washington, and Wyoming, and the Territories of Arizona and New Mexico.

Who May Make a Desert-Land Entry

4. Any citizen of the United States, twenty-one years of age, or any person of that age who has declared his intention of becoming a citizen of the United States, and who can make the affidavit specified in paragraph 9 of these regulations, can make a desert-land entry. Thus a woman, whether married or single, who possesses the necessary qualifications, can make a desert-land entry.

At the time of making final proof, however, entrymen of alien birth must have been admitted to full citizenship, which must be shown by a duly certified copy of the certificate of naturalization.

Quantity of Land That May Be Acquired

5. Under the original act of March 3, 1877, a person was allowed to enter one section, or 640 acres, of desert land, but, by the act of March 3, 1891, no person is allowed to enter more than 320 acres of desert land. Moreover, by the act of August 30, 1890 (26 Stats., 391), no person is permitted to acquire title under all the agricultural land laws, to more than 320 acres; therefore, if a person has, since August 30, 1890, acquired, under any of the laws except the mineral laws, 320 acres, or is at the date of his application claiming 320 acres under said laws, he is not authorized to make a desert-land entry for any quantity whatever.

A person may make only one entry under the desert-land law, and the right is exhausted by that entry, whether the maximum quantity of land, or less, is entered, except, however, that under the act of March 26, 1908, if a person, prior to the passage of that act, has made an entry and has abandoned, lost, or forfeited the same, or has relinquished without receiving a valuable consideration therefor, such person may make a second entry. In such cases, however, it must be shown that the former entry was not assigned in whole or in part or canceled for fraud, and it must be so described by section, township, and range, or by date and number, as to be readily identified on the records of the General Land Office. In such cases it is not sufficient for the applicant to state that he made an entry at a certain land office, about a certain time; but the land must be sufficiently described, or the date and number of the entry stated.

Land Must Be in Compact Form

6. Land entered under these laws should be in compact form; which means that it should be as nearly a square form as possible. Where, however, it is impracticable, on account of the previous appropriation of adjoining lands, or on account of the topography of the country, to take the land in a compact form, all the facts regarding the situation, location, and character of the land sought to be entered, and the surrounding tracts, should be stated, in order that the General Land Office may determine whether, under all the circumstances, the entry should be allowed in the form sought. Entry-men should make a complete showing in this regard, and should state the facts, and not the conclusions they derive from the facts, as it is the province of the Land Department of the Government to determine whether or not, from the facts stated, the entry should be allowed.

How Preference Right May be Acquired on Unsurveyed Land

7. Prior to the act of March 28, 1908, a desert-land entry could embrace unsurveyed lands, but, since the date of that act, desert-land entries may not be made of unsurveyed lands. This act provides, however, that, if a duly qualified person shall go upon a tract of unsurveyed desert land and reclaim, or commence to reclaim, the same he shall be allowed a preference right of ninety days after the filing of the plat of survey in the local land office to make entry of the land. To preserve this preference right the work of reclamation must be continued up to the filing of the plat of survey, unless the reclamation of the land is completed before that time, and in that event the claimant must continue to cultivate and occupy the land until the survey is completed and the plat filed.

How to Proceed to Make a Desert-Land Entry

8. A person who desires to make entry under the desert-land laws, must file with the Register and Receiver of the proper land office a declaration or application, under oath, showing that he is a citizen of the United States, or has declared his intention to become a citizen; that he is 21 years of age or over; and that he is also a bona fide resident of the State or Territory in which the land sought to be entered is located. He must also state that he has not previously exercised the right of entry under the desert-land laws by making an entry or by having taken one by assignment; that he has not, since August 30, 1890, acquired title to, nor is claiming under any of the agricultural-land laws, including the lands applied for, lands which in the aggregate exceed 320 acres; and that he intends to reclaim the lands applied for, by conducting water thereon, within four years from the date of his application. This declaration must contain a description of the land, by legal subdivisions, section, township, and range.

9. Special attention is called to the terms of this application,

as they require a personal knowledge by the entryman of the lands intended to be entered. The affidavit, which is made a part of the application, may not be made by an agent or upon information and belief, and the Register and Receiver must reject all applications in which it is not made to appear that the statements contained therein are made upon the applicant's own knowledge and that it was obtained from a personal examination of the lands. The blank spaces in the application must be filled with a complete statement of the facts showing the applicant's acquaintance with the land and how he knows it to be desert land. This declaration must be corroborated by the affidavits of two reputable witnesses, who also must be personally acquainted with the land, and they must state the facts regarding the condition and situation of the land upon which they base the opinion that it is subject to desert entry.

10. Applicants and witnesses must in all cases state their places of actual residence, their business or occupation, and their post-office addresses. It is not sufficient to name only the county or State in which a person lives, but the town or city must be named also, and where he residence is in a city the street and number must be given. The Register and Receiver will be careful to note the post-office address on their records.

11. The application and corroborating affidavits must be sworn to before the Register or Receiver of the land district in which the land is located, or before a United States Commissioner or commissioner of a court exercising federal jurisdiction in the Territory, or before the judge or clerk of any court of record in the county or land district in which the land is situated. In case the application and affidavits are made out of the county in which the land is located, the applicant must show, by affidavit, that the application was made before the nearest or most accessible officer qualified to take such affidavits in the land district; see the act of March 4, 1904 (33 Stats., 59, and 32 L. D., 539). The affidavits of the applicant and his two witnesses must in every instance be made at the same time and place and before the same officer.

12. Persons who make desert-land entries must acquire a clear right to the use of sufficient water to irrigate and reclaim the whole of the land entered, or as much of it as is susceptible of irrigation, and of keeping it permanently irrigated. Therefore, if a person makes an entry before he has acquired a water right, he does so at his own risk, because one entry will exhaust his right, and he will not be repaid the money paid at the time of making the entry.

13. At the time of filing his application with the Register and Receiver the applicant should also file a map showing the plan by which he proposes to conduct water upon the land and the manner by which he intends to irrigate the same, and at the same time he must pay the Receiver the sum of 25 cents per acre for the land applied for. The Receiver will issue a receipt for the money, and the Register and Receiver will jointly issue a certificate showing the allowance of the entry. This application will be given its proper serial number, and at the end of each month an abstract of the entries allowed under these laws will be transmitted to the General Land Office.

Assignments

14. Under the act of March 3, 1891, the whole of a desert-land entry might be assigned by the entryman, and by the act of March 28, 1908, an entry may be assigned either in whole or in part; but this does not mean that less than a legal subdivision may be assigned. Therefore, where an entry embraces only one lot or one 40-acre tract, the whole may be assigned, but no assignment of any part less than the whole will be recognized.

15. The act of March 28, 1908, also provides that no person may take a desert entry by assignment unless he is qualified to enter the tract so assigned to him. Therefore, if a person has made an entry in his own right, he cannot thereafter take an entry by assignment, notwithstanding the fact that the area of the two entries combined may not exceed 320 acres.

The language of the act indicates that the taking of an entry by assignment is equivalent to the making of an entry, and this being so, no person is allowed to take more than one entry by assignment. The desert-land right is exhausted either by making an entry or by taking one by assignment.

However, under the practice recognized by the General Land Office, where assignments were taken of more than one entry or where a person made an entry and also took one or more entries by assignment, the aggregate area of the land embraced in all such entries not exceeding 320 acres, such assignments and entries will not be disturbed. But all assignments and entries made subsequent to the approval of the act of March 28, 1908, must be governed by the terms of that act, which is held to mean that the desert-land right is exhausted either by making an entry or by taking one by assignment.

The act of March 28, 1908, forbids the assignment of an entry to a corporation or an association.

16. As stated above, desert-land entries may be assigned in whole or in part, and as evidence of the assignment there should be transmitted to the General Land Office the original deed of assignment or a certified copy thereof. Where the deed of assignment is recorded, a certified copy may be made by the officer who has custody of the record. Where the original deed is presented to an officer qualified to take proof in desert-land cases, a copy certified by such officer will be accepted. Attention is called to the fact that copies of deeds of assignment certified by notaries public or justices of the peace, or, indeed, any other officers than those who are qualified to take proofs and affidavits in desert-land cases, will not be accepted.

An assignee must file, with his deed of assignment, an affidavit showing qualifications to take the entry assigned to him. He must show what entries have been made by or assigned to him under the agricultural laws, and he must also show his qualifications as a citizen of the United States, that he is 21 years of age or over, and also that he is a resident citizen of the State or Territory in which the land assigned to him is situated. In short, the assignee must possess the qualifications required of the party making an entry. No assignable interest is acquired by the applicant prior to the payment of 25 cents an acre. (33 L. D., 152.) An assignment made prior to or on the day of such payment is treated as evidence of fraud. (2 L. D.,

22.) The sale of the land embraced in an entry at any time before final payment is made must be regarded as an assignment of the entry, and in such cases the person buying the land must show that he possesses all the qualifications required of an assignee. (29 L. D., 453.)

Annual Proofs

17. During the first, second, and third years after making entry the entryman must expend one dollar each year for each acre of land entered by him for the purpose of improving and reclaiming the land, and at or before the end of each year he must make and file with the Register and Receiver proof of such expenditure. With the third year's proof there should also be filed a map or plan showing the improvements made upon the land. This proof, which is known as yearly or annual proof, may be made before any officer who is qualified to take the affidavits required at the time of making the application. This proof must be made by the applicant, whose affidavit must be corroborated by that of two reputable witnesses, all of whom must have personal knowledge that the expenditures were made for the purpose stated in the proof.

This proof must be made in the county or land district in which the land is located, and when it is made outside of the county in which the land is situated, claimant must show by his affidavit that it was made before the nearest or most accessible officer qualified to take such proof.

18. In making annual proof, expenditures for ditches, canals, dams, fences, roads, where they are necessary, the first breaking of the soil, for erecting barns, stables, etc., and for digging wells, where they are to be used in irrigating the lands, will be accepted as satisfactory expenditures; but expenditures for surveying the land in order to locate the corners of the same will not be accepted. However, where such surveying is for the purpose of ascertaining the levels of ditches, canals, etc., it may be accepted. Expenditures for cultivation after the soil has been first prepared will not be allowed, because the entryman is supposed to be repaid for such work by the crops to be reaped as a result of cultivation. Expenditures for material of any kind will not be allowed, unless such material has been actually installed or used for the purpose for which it is purchased. For instance, if credit is asked for posts and wire for fences, it must be shown that the fence has been actually constructed by erecting the posts and stringing the wire on them. Annual proofs must contain itemized statements showing the manner in which expenditures were made.

Expenditures for stock or interest in an irrigating company, through which water is to be secured for irrigating the land, will also be accepted as satisfactory annual expenditures; but in such cases the claimant must furnish a receipt for the money paid for the stock, or other written evidence of payment for the stock or interest in the irrigating plant. Annual proofs must be forwarded to the General Land Office at the end of the month during which they are made, after having been properly noted on the records of the local land office.

At the end of each year, if the required proof of actual

One-eighth of land must be tilled

expenditures has not been made, the Register and Receiver will send the entryman notice and allow him sixty days in which to submit such proof. If the proof is not furnished as required, the fact that notice was served upon the claimant should be reported to the General Land Office, with evidence of service, whereupon the entry will be canceled. Registers and Receivers should keep on hand a sufficient supply of blank forms used in notifying the entrymen that annual proofs are due, and they should send such notices whenever necessary, without waiting further instructions from the General Land Office.

19. Nothing in the statutes or the regulations should be construed to mean that the entryman must wait until the end of the year to submit his annual proof, because the proof may be properly submitted as soon as the expenditures have been made. Proof sufficient for the three years may be offered whenever the amount of \$3 an acre has been expended in reclaiming and improving the land, and thereafter annual proof will not be required.

Final Proof

20. The entryman, or his assignee, if the entry has been assigned, is ordinarily allowed four years from the date of the entry in which to complete the reclamation of the land, and he is entitled to make final proof and receive patent as soon as he has expended the sum of \$3 an acre in improving and reclaiming the land, and has reclaimed all of the irrigable land embraced in his entry, and has actually cultivated one-eighth of the entire area of the land entered. When an entryman has reclaimed the land and is ready to make final proof he should apply to the Register and Receiver for a notice of intention to make such proof. This notice must contain a complete description of the land and must describe the entry by giving the number thereof and the name of the entryman. If the proof is made by an assignee, his name as well as that of the original entryman should be stated. It must also show when, where, and before whom the proof is to be made. Four witnesses may be named in this notice, two of whom must be used in making the proof.

21. This notice must be published once a week for five successive weeks in a newspaper of established character and general circulation published nearest the land, and it must also be posted in a conspicuous place in the local land office for the same period of time. The date fixed for the taking of the proof must be at least thirty days after the date of first publication. Proof of publication must be made by the affidavit of the publisher of the newspaper or by some one authorized to act for him. The Register will certify to the posting of the notice in the local office.

22. At the time and place mentioned in the notice, and before the officer named therein, the claimant will appear with two of the witnesses named in the notice, and make proof of the reclamation, cultivation, and improvement of the land. This proof may be taken by any officer qualified to take the affidavits taken at the time of making the original entry. All claimants, however, are advised that, wherever possible, they should make

proof before the Register or Receiver, because, by so doing, they may, in many instances, avoid delay caused by the fact that proofs submitted before officers other than the Register or Receiver are frequently suspended for investigation by a special agent.

The testimony of each claimant should be taken separate and apart from and not within the hearing of either of his witnesses, and the testimony of each witness should be taken separate and apart from and not within the hearing of either the applicant or of any of his witnesses, and both the applicant and each of the witnesses should be required to state, in and as a part of the final proof testimony given by them, that they have given such testimony without any actual knowledge of any statement made in the testimony of either of the others.

Irrigation, Cultivation and Water Rights

23. The final proof must show specifically the source and volume of the water supply, and how it was acquired and how maintained. The number, length, and carrying capacity of all ditches of each of the legal subdivisions must also be shown. The claimant and the witnesses must each state in full all that has been done in the matter of reclamation and improvement of the land, and must answer fully, of their own personal knowledge, all of the questions contained in the final proof blanks. They must state plainly whether, at any time, they saw the land effectually irrigated, and the difference dates on which they saw the land irrigated should be specifically stated.

24. All of each legal subdivision must be actually irrigated. Therefore, it is not sufficient to state that water has been conducted upon each legal subdivision. If there are some high points which it is not practicable to irrigate, the nature, extent, location, and area of such points should be fully stated. If no part of a legal subdivision is susceptible of irrigation, such legal subdivision must be relinquished. (20 L. D., 449.)

25. As a rule, actual tillage of one-eighth of the land must be shown. It is not sufficient to show only that there has been a marked increase in the growth of grass, or that grass sufficient to support stock has been produced on the land. If, however, on account of some peculiar climatic or soil conditions, no crops except grass can be successfully produced, or if actual tillage will destroy or injure the productive quality of the soil, the actual production of a crop of hay of merchantable value will be accepted as sufficient compliance with the requirements as to cultivation. (32 L. D., 456.) In such cases, however, the facts must be stated, and the extent and value of the crop of hay must be shown.

26. The final proof must also show that the claimant has a right, under the laws of the State or Territory in which the land is located, to a sufficient supply of water to successfully irrigate all the irrigable land embraced in his entry. It must clearly appear that the system of ditches to conduct the water to the land and to distribute it over the whole of each legal subdivision is adequate for that purpose. It is not enough to show that the claimant has constructed the ditches and has a right to a supply of water, but the proof must also show that the

Extension of time in submitting proof under certain conditions

water has been actually distributed over the land for such a length of time as to prove the sufficiency of the water supply.

27. In those States where entrymen have made applications for water rights and have been granted permits, but where no final adjudication of the water right can be secured from the State authorities, owing to delay in the adjudication of the water courses, or other delay for which the entrymen are in no way responsible, proof that the entrymen have done all that is required of them by the laws of the State, together with proof that the necessary supply of water has been actually used on the land, may be accepted. (35 L. D., 305.) This modification of the rule that the claimant must furnish evidence of an absolute water right will apply only in those States where, under the local laws, it is absolutely impossible for the entryman to secure final title to his water right within the time allowed him to submit final proof on his entry, and in such cases the best evidence obtainable must be furnished.

28. Where final proof is not made within the period of four years the Register and Receiver should send the claimant a notice, addressed to him at his post-office address of record, informing him that he will be allowed ninety days in which to submit final proof. Should no action be taken within the time allowed, the Register and Receiver will report that fact, together with evidence of service, to the General Land Office, whereupon the entry will be canceled.

Extension of Time in Submitting Proof Under Certain Conditions

29. Under the provisions of the act of March 28, 1908, the period of four years may be extended, in the discretion of the Commissioner of the General Land Office, for an additional period not exceeding three years if, by reason of some unavoidable delay in the construction of the irrigating works intended to convey water to the land, the entryman is unable to make proof of reclamation and cultivation required within the four years. This does not mean that the period within which proof may be made will be extended as a matter of course. The statute authorizes the Commissioner of the General Land Office to grant the extension in his discretion, and applications for extensions will not be granted unless it be clearly shown that the failure to reclaim and cultivate the land within the regular period of four years was due to no fault on the part of the entryman, but to some unavoidable delay for which he was not responsible and could not have readily foreseen.

An entryman who desires to make application for this extension of time should file with the Register and Receiver an affidavit setting forth fully all the facts, showing how and why he has been prevented from making final proof of reclamation and cultivation within the regular period. This affidavit should be corroborated by two witnesses who have personal knowledge of the facts, and the Register and Receiver, after carefully considering all of the facts, will forward the application to the General Land Office, with appropriate recommendation thereon.

Inasmuch as Registers and Receivers reside in their respective districts, they are presumed to have more or less personal knowledge of the conditions existing therein, and for that reason much weight will be given their recommendations.

Payments—Fees

30. At the time of making final proof the claimant must pay to the Receiver the sum of \$1 per acre for each acre of land upon which proof is made. This, together with the 25 cents per acre paid at the time of making the original entry, will amount to \$1.25 per acre, which is the price to be paid for all lands entered under the desert-land law, regardless of their location. The Receiver will issue a receipt for the money paid, and, if the proof is satisfactory, the Register will issue a certificate in duplicate and deliver one copy to the entryman and forward the other copy to the General Land Office at the end of the month during which the certificate was issued.

If the entryman is dead and proof is made by any one for the heirs or devisees, the final certificate should issue to the heirs or devisees generally, without naming them.

When final proof is made on an entry made prior to the act of March 28, 1908, for unsurveyed land, if such proof is satisfactory, the Register and Receiver will approve the same and forward it to the General Office, without collecting the final payment of \$1 an acre, and without issuing final certificate. Fees for reducing the final proof testimony to writing should be collected and receipt issued therefor, if the proof is taken before the Register and Receiver. As soon as the land is surveyed they will call upon the entryman to make proof in the form of an affidavit, duly corroborated, showing the legal subdivisions covered by his entry. When this has been done the Register and Receiver will correct their records so as to make them describe the land by legal subdivisions, and, if final proof has been made and found satisfactory, and no other objections exist, final papers should be issued, upon payment of the proper amount.

31. No fees or commissions are required of persons making entry under the desert-land laws, except such fees as are paid to the officers for taking the affidavits and proofs. The only payments made to the Government are the original payment of 25 cents an acre at the time of making the application, and the final payment of \$1 an acre, to be paid at the time of making final proof. Where final proofs are made before the Register or Receiver in California, Oregon, Washington, Nevada, Colorado, Idaho, New Mexico, Arizona, Utah, Wyoming, and Montana they will be entitled to receive, jointly, 22½ cents for each 100 words of testimony reduced to writing; in all other States they will be allowed 15 cents per 100 words for such service. United States commissioners, United States court commissioners, judges, and clerks are not entitled to receive a greater sum than 25 cents for each oath administered by them, except that they are entitled to receive \$1 for administering the oath to each entryman and each final proof witness to final proof testimony which has been reduced to writing by them.

Contests and Relinquishments

32. Contests may be instituted against desert-land entries for illegality or fraud in the inception of the entry, or for failure to comply with the law after entry, or for any sufficient cause affecting the legality of the claim. An entry made in the interest of, or for the benefit of, another, is illegal, and is subject to contest on that ground. Successful contestants will be allowed a preference right of entry for thirty days after notice of the cancellation of the contested entry, in the same manner as in homestead cases, and the Register will give the same notice, and is entitled to the same fee for notice as in other cases.

33. A desert-land entry may be relinquished at any time by the party owning the same, and when relinquishments are filed in the local land office the entries will be canceled by the Register and Receiver in the same manner as in homestead, pre-emption, and other cases, under the first section of the act of May 14, 1880 (21 Stats., 140).

Desert-Land Entries Within a Reclamation Project

34. By section 5 of the act of June 27, 1906 (34 Stats., 520), it is provided that any desert-land entryman, who has been or may be, directly or indirectly, hindered, delayed, or prevented from making improvements on or from reclaiming the lands embraced in his entry, by reason of any withdrawal under the reclamation act of June 17, 1902 (32 Stats., 520), will be excused during the continuance of such hindrance from complying with the provisions of the desert-land laws.

This act applies only to persons who have been, directly or indirectly, delayed or prevented, by the creation of any reclamation project or by any withdrawal of public lands under the reclamation act, from improving or reclaiming the lands covered by their entries.

35. No entryman will be excused under this act from a compliance with all of the requirements of the desert-land law until he has filed in the local land office for the district in which his lands are situated, an affidavit showing in detail all of the facts upon which he claims the right to be excused. This affidavit must show when the hindrance began, the nature, character, and extent of the same, and it must be corroborated by two disinterested persons, who can testify from their own personal knowledge.

36. The Register and Receiver will at once forward the application to the engineer in charge of the reclamation project under which the lands involved are located and request a report and recommendation thereon. Upon the receipt of this report the Register and Receiver will forward it, together with the applicant's affidavit and their recommendation, to the General Land Office, where it will receive appropriate consideration and be allowed or denied, as the circumstances may justify.

37. Inasmuch as entrymen are allowed one year after entry in which to submit the first annual proof of expenditures for the purpose of improving and reclaiming the land entered by them, the privileges of this act are not necessary in connection with

annual proofs until the expiration of the years in which such proofs are due. Therefore, if at the time that annual proof is due it cannot be made, on account of hindrance or delay occasioned by a withdrawal of the land for the purpose indicated in the act, the applicant will file his affidavit explaining the delay. As a rule, however, annual proofs may be made, notwithstanding the withdrawal of the land, because expenditures for various kinds of improvements, as indicated herein, are allowed as satisfactory annual proofs. Therefore an extension of time for making annual proof will not be granted unless it is made clearly to appear that the entryman has been delayed or prevented by the withdrawal from making the required improvements; and, unless he has been so hindered or prevented from making the required improvements, no application for extension of time for making final proof will be granted until after all the yearly proofs have been made.

38. An entryman will not need to invoke the privileges of this act in connection with final proof until such final proof is due, and if, at that time, he is unable to make the final proof of reclamation and cultivation, as required by law, and such inability is due, directly or indirectly, to the withdrawal of the land on account of a reclamation project, the affidavit explaining the hindrance and delay should be filed in order that the entryman may be excused for such failure.

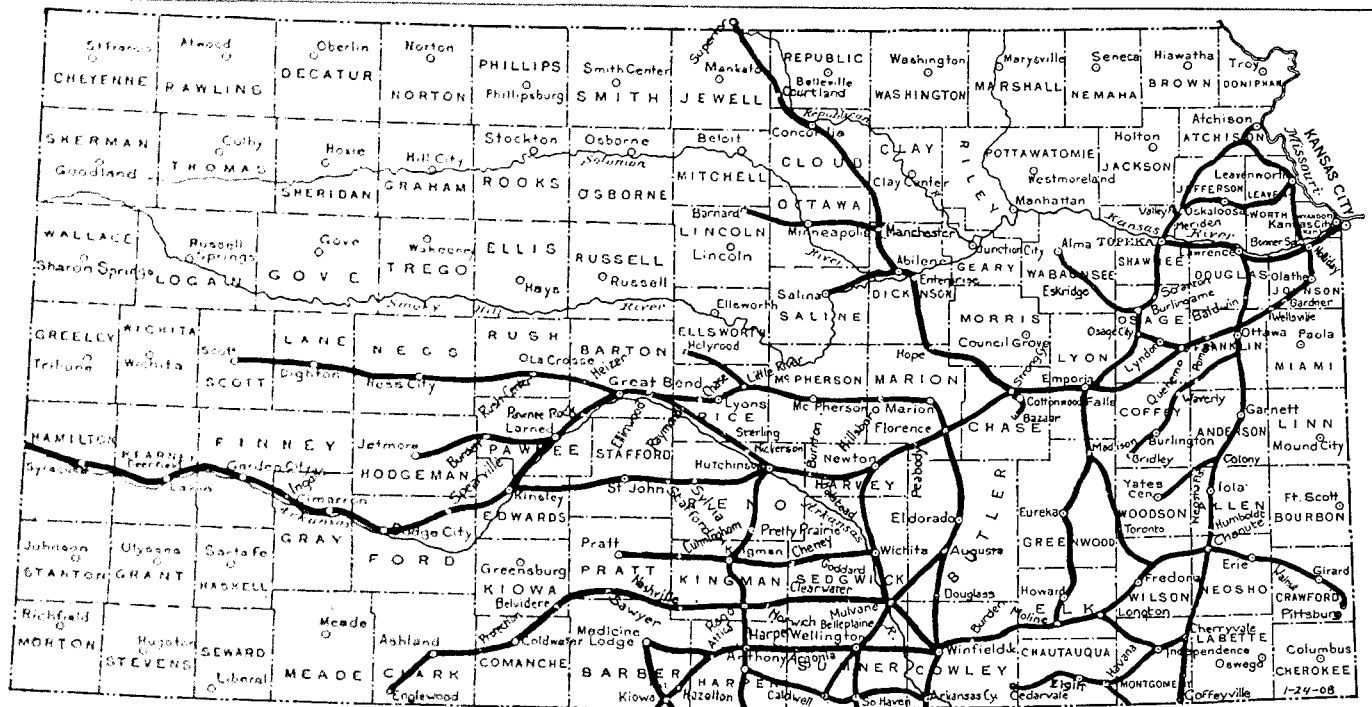
39. When the time for submitting final proof has arrived, and the entryman is unable, by reason of the withdrawal of the land, to make such proof, upon proper showing, as indicated herein, he will be excused, and the time during which it is shown that he has been hindered or delayed on account of the withdrawal of the land will not be computed in determining the time within which final proof must be made.

40. If after investigation the irrigation project has been or may be abandoned by the Government, the time for compliance with the law by the entryman will begin to run from the date



Cattle Range, New Mexico.

Sections in which Government land is open for entry



MAP OF SANTA FE LINES IN KANSAS.

of notice of such abandonment of the project, and of the restoration to the public domain of the lands which had been withdrawn in connection with the project. If, however, the reclamation project is carried to completion by the Government and a water supply has been made available for the land embraced in such desert-land entry, the entryman must comply with all the provisions of the act of June 17, 1902, and must relinquish all the land embraced in his entry in excess of 160 acres; and upon making final proof and complying with the terms of payment prescribed in said act of June 17, 1902, he shall be entitled to patent.

41. Special attention is called to the fact that nothing contained in the act of June 27, 1906, shall be construed to mean that a desert-land entryman, who owns a water right and reclaims the land embraced in his entry, must accept the conditions of the reclamation act of June 17, 1902, but he may proceed independently of the Government's plan of irrigation and acquire title to the land embraced in his desert-land entry by means of his own system of irrigation.

42. Desert-land entrymen within exterior boundaries of a reclamation project who expect to secure water from the Government must relinquish all of the lands embraced in their entries in excess of 160 acres whenever they are required to do so through the local land office.

All circulars or regulations in conflict with any of the regulations announced in this circular are hereby revoked.

GOVERNMENT LANDS

Kansas

RAINFALL—Medicine Lodge, 26.12 inches.
—Coolidge, 22.47 inches.

FINNEY COUNTY: COUNTY SEAT, GARDEN CITY; LAND OFFICE, DODGE CITY. AREA UNRESERVED GOVERNMENT LAND, 3,196 ACRES.

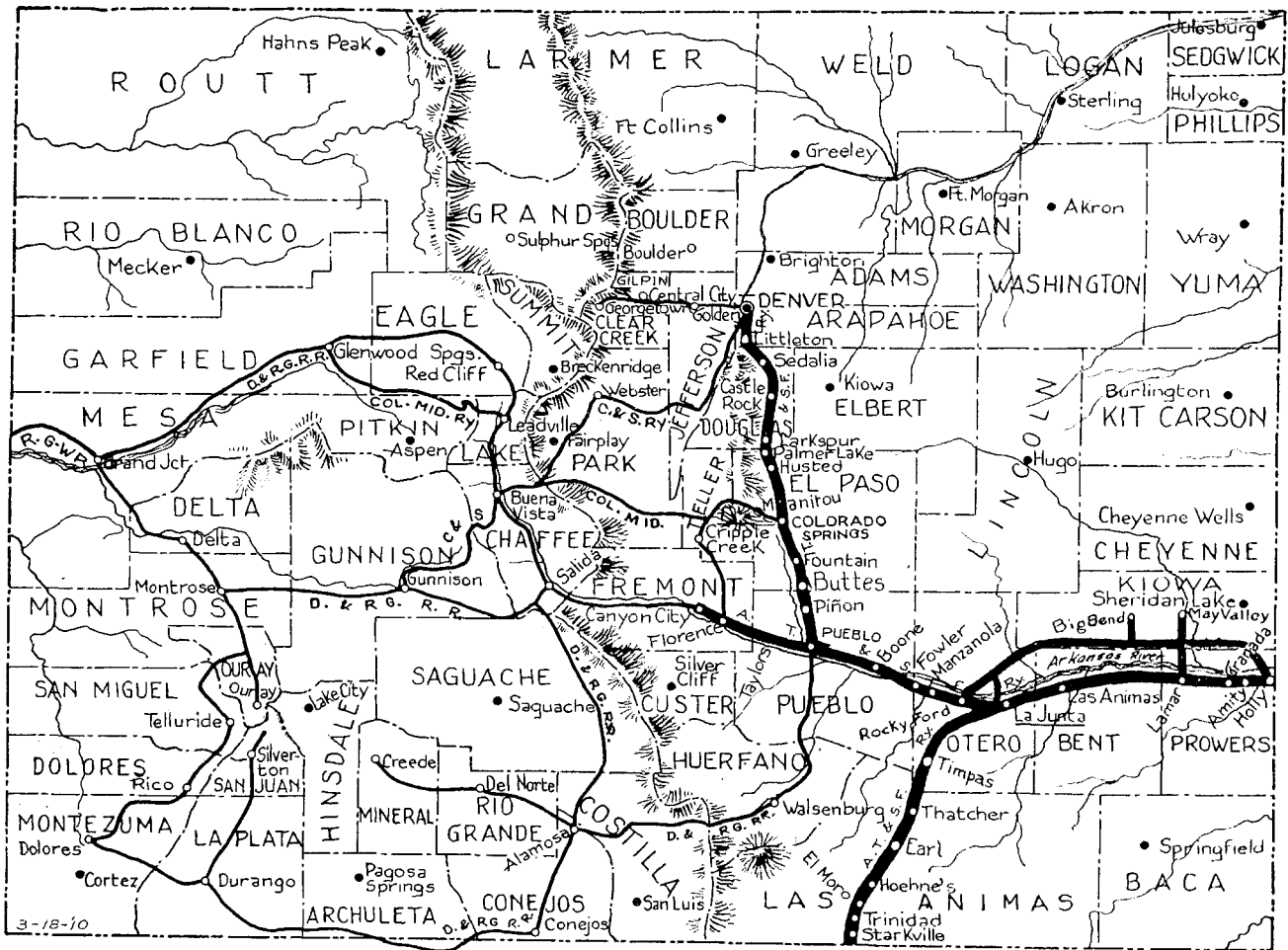
Rough and sandy land. Water obtained from wells at from twenty to one hundred and fifty feet. No canals or ditches accessible.

GRANT COUNTY: COUNTY SEAT, ULYSSES; LAND OFFICE, DODGE CITY. AREA UNRESERVED GOVERNMENT LAND, 2,000 ACRES. Adapted to grazing.

KEARNY COUNTY: COUNTY SEAT, LAKIN; LAND OFFICE, DODGE CITY. AREA UNRESERVED GOVERNMENT LAND, 1,920 ACRES. Adapted for stock raising. No land suitable for agriculture without irrigation. Water obtained from artesian wells. No canals in contemplation.

MORTON COUNTY: COUNTY SEAT, RICHFIELD; LAND OFFICE, DODGE CITY. AREA UNRESERVED GOVERNMENT LAND, 37,980 ACRES.

Sections in which Government land is open for entry



MAP OF SANTA FE LINES IN COLORADO.

- Adapted to grazing. Requires irrigation. Water obtained from wells, twenty to two hundred feet deep. No irrigation projects accessible.
- HAMILTON COUNTY: COUNTY SEAT, SYRACUSE; LAND OFFICE, DODGE CITY. AREA UNRESERVED GOVERNMENT LAND, 5,467 ACRES.
- Part grazing, part rough and sandy. No irrigation other than Amity Canal. No government land under ditches.
- HASKELL COUNTY: COUNTY SEAT, SANTA FE; LAND OFFICE, DODGE CITY. AREA UNRESERVED GOVERNMENT LAND, 1,020 ACRES.
- Adapted to grazing. No irrigation. Water obtained from wells.
- SEWARD COUNTY: COUNTY SEAT, LIBERAL; LAND OFFICE, DODGE CITY. AREA UNRESERVED GOVERNMENT LAND, 13,260 ACRES. Adapted to agriculture and grazing. No irrigation required. Water obtained from wells.

- STANTON COUNTY: COUNTY SEAT, JOHNSON; LAND OFFICE, DODGE CITY. AREA UNRESERVED GOVERNMENT LAND, 6,226 ACRES.
- Adapted to grazing. No agricultural land without irrigation. Water obtained from wells. Good grazing land, fine stock country.
- STEVENS COUNTY: COUNTY SEAT, HUGOTON; LAND OFFICE, DODGE CITY. AREA UNRESERVED GOVERNMENT LAND, 8,280 ACRES.
- Adapted to grazing. Must be irrigated for agriculture. Water obtained from artesian wells. Good grazing land.

Colorado

- RAINFALL--Lamar, 17.06 inches.
- Colorado Springs, 14.17 inches.
- ARAPAHOE COUNTY: COUNTY SEAT, DENVER; LAND OFFICE, DENVER. AREA UNRESERVED GOVERNMENT LAND, 41,200 ACRES.

Sections in which Government land is open for entry

Adapted to farming and stock raising. Requires irrigation. Many canals in operation. Much good grazing land for cattle.

ADAMS COUNTY: COUNTY SEAT, BRIGHTON; LAND OFFICE, DENVER. AREA UNRESERVED GOVERNMENT LAND, 127,880 ACRES.

Adapted to agriculture and stock raising. Requires irrigation. Is a fine agricultural district. Presents good opportunities for settlers.

BACA COUNTY: COUNTY SEAT, SPRINGFIELD; LAND OFFICE, LAMAR. AREA UNRESERVED GOVERNMENT LAND, 1,075,500 ACRES.

Adapted to grazing. Some agricultural lands that can be cultivated without irrigation. No ditches or irrigated land. Artesian wells thought to be practicable.

BENT COUNTY: COUNTY SEAT, LAS ANIMAS; LAND OFFICE, LAMAR. AREA UNRESERVED GOVERNMENT LAND, 482,500 ACRES.

Suitable for grazing and for agriculture when irrigated. Water obtained from Arkansas River. Two canals accessible. Good grazing for cattle and sheep.

EL PASO COUNTY: COUNTY SEAT, COLORADO SPRINGS; LAND OFFICE, PUEBLO. AREA UNRESERVED GOVERNMENT LAND, 200,417 ACRES.

Land best adapted to grazing. Agricultural land must be irrigated. Water obtained from streams, wells and springs.

FREMONT COUNTY. COUNTY SEAT, CANON CITY; LAND OFFICES, DEL NORTE, LEADVILLE AND PUEBLO. AREA UNRESERVED GOVERNMENT LANDS, 605,882 ACRES.

One-third area is agricultural and grazing land. Requires irrigation for successful farming.

LAS ANIMAS COUNTY: COUNTY SEAT, TRINIDAD; LAND OFFICES, LAMAR AND PUEBLO. AREA UNRESERVED GOVERNMENT LAND, 1,906,965 ACRES.

One-third of this land is mountainous, adapted to grazing. Remainder agricultural land, requiring irrigation.

OTERO COUNTY: COUNTY SEAT, LA JUNTA; LAND OFFICE, PUEBLO. AREA UNRESERVED GOVERNMENT LAND, 626,011 ACRES.

Land is agricultural and grazing, adapted to farming and stock raising.

PROVERS COUNTY: COUNTY SEAT, LAMAR; LAND OFFICE, LAMAR. AREA UNRESERVED GOVERNMENT LAND, 420,400 ACRES.

Prairie and valley farming land adapted to agriculture and stock raising. Irrigation required. Water obtained from ditches and canals. Excellent opportunities for obtaining agricultural lands under homestead laws.

PUEBLO COUNTY: COUNTY SEAT, PUEBLO; LAND OFFICE, PUEBLO. AREA UNRESERVED GOVERNMENT LAND, 478,818 ACRES.

Government land, three-fourths agricultural and one-fourth mountainous. Adapted to farming and grazing. Irrigation necessary for general farming.

New Mexico

RAINFALL.—Pecos Valley, 15.21 inches.

—Las Vegas, 18.43 inches.

—Albuquerque, 12.05 inches.

—Mesilla Valley, 13.17 inches.

Pecos Valley

CHAVES COUNTY: COUNTY SEAT, ROSWELL; LAND OFFICE, ROSWELL. AREA UNRESERVED GOVERNMENT LAND, 3,931,904 ACRES.

Grazing, rolling prairie land, adapted to farming and stock raising. Land cannot be cultivated without irrigation. Land obtainable under homestead, desert and script law.

EDDY COUNTY: COUNTY SEAT, CABLSBAD; LAND OFFICE, ROSWELL. AREA UNRESERVED GOVERNMENT LAND, 3,291,830 ACRES.

Mostly prairie adapted to grazing. Must be irrigated. Water obtainable from artesian wells. Not much opportunity for settlers to obtain agricultural lands.

ROOSEVELT COUNTY: COUNTY SEAT, PORTALES; LAND OFFICES, ROSWELL AND CLAYTON. AREA UNRESERVED GOVERNMENT LAND, 263,832 ACRES.

Adapted to grazing and agriculture. In many parts irrigation not necessary. Good supply of water and underground streams at depth of one hundred feet for irrigating purposes. Good opportunities to secure agricultural and grazing land. Well adapted for grain and fruit growing.

Mesilla and Rio Grande Valleys

DONA ANA COUNTY: COUNTY SEAT, LAS CRUCES; LAND OFFICE, LAS CRUCES. AREA UNRESERVED GOVERNMENT LAND, 2,070,630 ACRES.

Land mountainous. Adapted to agriculture and grazing. Must be irrigated. Water obtainable from wells and ditches along the Rio Grande River. No canals accessible.

SOCORRO COUNTY: COUNTY SEAT, SOCORRO; LAND OFFICES, LAS CRUCES AND SANTA FE. AREA UNRESERVED GOVERNMENT LAND, 5,432,651 ACRES.

Adapted to grazing. Large area of agricultural land. May be irrigated by ditches and pumping plants. No canals accessible. Opportunities for settlers under desert and timber laws.

SIERRA COUNTY: COUNTY SEAT, HILLSBORO; LAND OFFICE, LAS CRUCES. AREA UNRESERVED GOVERNMENT LAND, 1,168,160 ACRES.

Adapted to agriculture in the valleys. Irrigation required. Water for irrigation obtained from Rio Grande and other streams. No canals accessible, but Government dam under construction at Elephant Butte will reclaim large area.

VALENCIA COUNTY: COUNTY SEAT, LOS LUNAS; LAND OFFICE, SANTA FE. AREA UNRESERVED GOVERNMENT LAND, 286,988 ACRES.

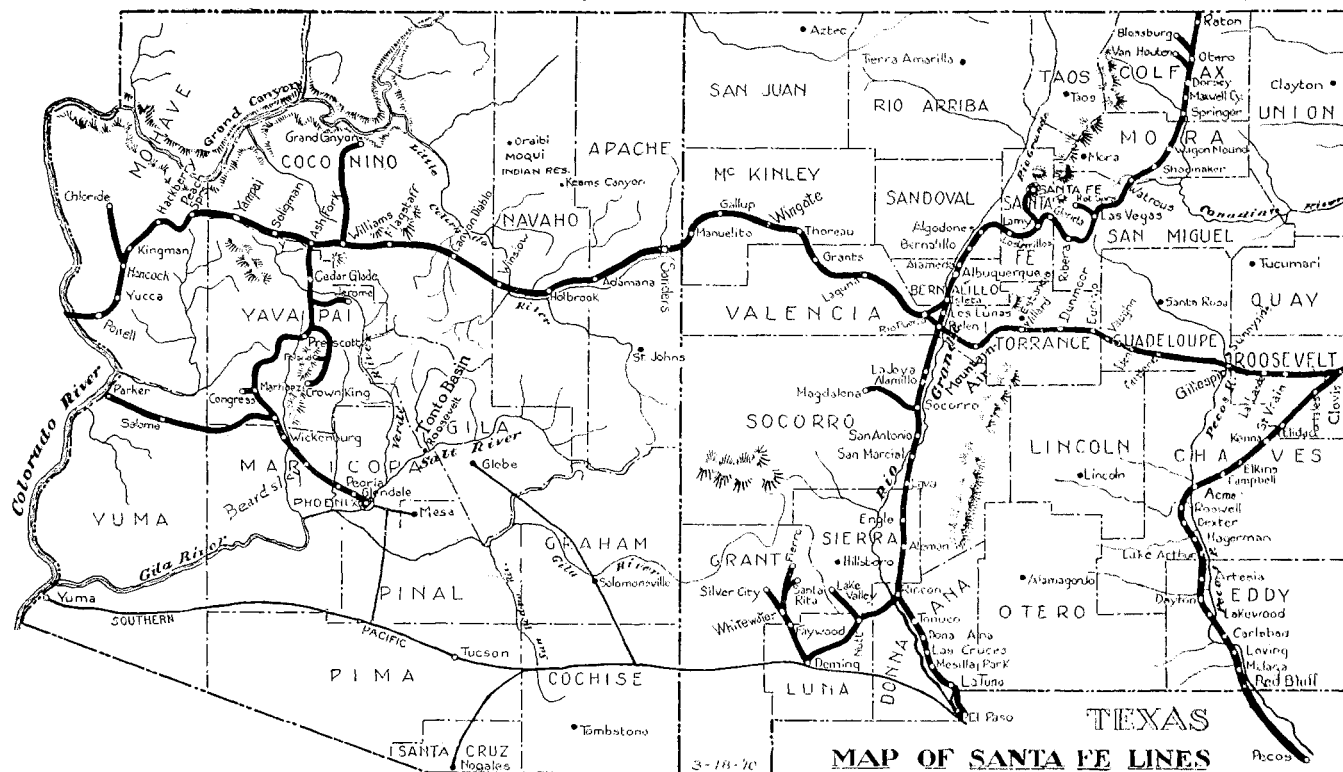
Adapted to agriculture and fruit raising. Irrigation necessary. Water derived from Rio Grande and Puerco rivers. Soil rich and productive when irrigated.

Counties Not Included in Foregoing

COLFAX COUNTY: COUNTY SEAT, RATON; LAND OFFICES, SANTA FE AND CLAYTON. AREA UNRESERVED GOVERNMENT LAND, 407,957 ACRES.

Adapted to stock raising, agriculture and horticulture. Crops raised under irrigation and dry farming methods. Many fertile valleys. Excellent grazing land.

Sections in which Government land is open for entry



**MAP OF SANTA FE LINES
IN
NEW MEXICO AND ARIZONA.**

LUNA COUNTY: COUNTY SEAT, DEMING; LAND OFFICE, LAS CRUCES. AREA UNRESERVED GOVERNMENT LAND, 1,657,030 ACRES.

Adapted to grazing and agriculture. Must be irrigated. Water obtainable from wells.

MCKINLEY COUNTY: COUNTY SEAT, GALLUP; LAND OFFICE, SANTA FE. AREA UNRESERVED GOVERNMENT LAND, 762,818 ACRES.

Adapted to grazing chiefly. Valuable timber in southern part.

MORO COUNTY: COUNTY SEAT, MORO; LAND OFFICES, CLAYTON AND SANTA FE. AREA UNRESERVED GOVERNMENT LAND, 574,718 ACRES.

Adapted to stock raising and farming. Some agricultural lands susceptible of cultivation without irrigation. Water for irrigation obtained from springs and wells. No canals accessible.

SAN MIGUEL COUNTY: COUNTY SEAT, LAS VEGAS; LAND OFFICES, CLAYTON AND SANTA FE. AREA UNRESERVED GOVERNMENT LAND, 730,756 ACRES.

Adapted to grazing or dry farming, and (with irrigation) to agriculture. In many sections farming without irrigation feasible. Abundance of water ways make irrigation easy.

SANTA FE COUNTY: COUNTY SEAT, SANTA FE; LAND OFFICE, SANTA FE. AREA UNRESERVED GOVERNMENT LAND, 378,104 ACRES.

Land adapted to grazing. Some lands available for agriculture. Soil very fertile, capable of irrigation. Water supply ample. Enlargement of irrigation systems under contemplation.

SANDOVAL COUNTY: COUNTY SEAT, BERNALILLO; LAND OFFICE, SANTA FE. AREA UNRESERVED GOVERNMENT LAND, 689,770 ACRES.

Lands suitable for grazing and agriculture, one-third acreage susceptible of irrigation. Excellent opportunity for irrigation enterprises. Land and climate especially adapted to fruit raising.

BERNALILLO COUNTY: COUNTY SEAT, ALBUQUERQUE; LAND OFFICE, SANTA FE. AREA UNRESERVED GOVERNMENT LAND, 218,168 ACRES.

Lands mostly mountainous, little fitted for agriculture unless irrigated. Water developed by sinking wells. Considerable good grazing land.

GRANT COUNTY: COUNTY SEAT, SILVER CITY; LAND OFFICE, LAS CRUCES. AREA UNRESERVED GOVERNMENT LAND, 2,942,920 ACRES.

Sections in which Government land is open for entry

Land suitable for agriculture and fruit raising. Must be irrigated. Good grazing land. Water for irrigation obtained from streams. Homestead laws favorable.

GUADALUPE COUNTY: COUNTY SEAT, SANTA ROSA; LAND OFFICES, ROSWELL, SANTA FE AND TUCUMCARI. AREA UNRESERVED GOVERNMENT LAND, 1,286,669 ACRES.

Adapted to grazing. Vast amount of flood water wasted which if properly stored would irrigate large number of acres. Land very fertile. Excellent opportunities to obtain agricultural and grazing lands under homestead and desert acts.

TORRANCE COUNTY: COUNTY SEAT, TORRANCE; LAND OFFICES, ROSWELL AND SANTA FE. AREA UNRESERVED GOVERNMENT LAND, 1,429,299 ACRES.

Land adapted to stock raising and agriculture. Excellent land for dry farming. Plenty of water to be derived from pumping shallow wells. Excellent opportunities for obtaining good agricultural lands under homestead and desert acts.

Oklahoma

There is but little public land in Oklahoma. It is unfit for cultivation, being either rough, broken or rocky.

Arizona

RAINFALL—Phoenix, 7.74 inches.
—Holbrook, 8.70 inches.

APACHE COUNTY: COUNTY SEAT, ST. JOHNS; LAND OFFICE, PHOENIX. AREA UNRESERVED GOVERNMENT LAND, 1,512,302 ACRES.

Generally mountainous and arid. Adapted to grazing. Some land suitable for agriculture. No agriculture without irrigation. Water for irrigation from reservoirs, surface and artesian wells.

COCONINO COUNTY: COUNTY SEAT, FLAGSTAFF; LAND OFFICE, PHOENIX. AREA UNRESERVED GOVERNMENT LAND, 4,790,537 ACRES.

Generally mountainous and timbered. Adapted to grazing. Little agriculture is carried on.

MARICOPA COUNTY: COUNTY SEAT, PHOENIX; LAND OFFICE, PHOENIX. AREA UNRESERVED GOVERNMENT LAND, 4,396,213 ACRES.

Land broken and adapted to grazing. Cannot be cultivated without irrigation. Much arable land when irrigated. Government irrigation project now under process of construction.

MOHAVE COUNTY: COUNTY SEAT, KINGMAN; LAND OFFICE, PHOENIX. AREA UNRESERVED GOVERNMENT LAND, 7,756,300 ACRES.

Land broken and adapted to grazing. Fine sheep and goat country. Considerable arable land where water can be obtained.

NAVAJO COUNTY: COUNTY SEAT, HOLBROOK; LAND OFFICE, PHOENIX. AREA UNRESERVED GOVERNMENT LAND, 1,688,229 ACRES.

Land arid and broken. Adapted to grazing. Excellent for goat ranches.

PINAL COUNTY: COUNTY SEAT, FLORENCE; LAND OFFICE, PHOENIX. AREA UNRESERVED GOVERNMENT LAND, 2,348,140 ACRES. Land well adapted to agriculture where water can be obtained. No irrigation system at present. Artesian wells have not been tried. Homestead laws most favorable.

YAVAPAI COUNTY: COUNTY SEAT, PRESCOTT; LAND OFFICE, PHOENIX. AREA UNRESERVED GOVERNMENT LAND, 3,065,245 ACRES.

Land generally mountainous and timbered. Adapted to grazing. Little can be cultivated without irrigation, which is accomplished by storage wells and ditches. Artesian wells have not been tried. Good grazing lands for cattle and sheep. Homestead laws most favorable.

California

RAINFALL—San Bernardino, 41.23 inches.
—San Joaquin Valley, 12.05 inches.
—Stockton, 15.11 inches.

FRESNO COUNTY: COUNTY SEAT, FRESNO; LAND OFFICES, OAKLAND, SACRAMENTO AND VISALIA. AREA UNRESERVED GOVERNMENT LAND, 339,014 ACRES.

Mountain land. Tulare Lake canal traverses this county and much arid land has been reclaimed and is now highly productive.

KERN COUNTY: COUNTY SEAT, BAKERSFIELD; LAND OFFICES, OAKLAND, LOS ANGELES AND VISALIA. AREA UNRESERVED GOVERNMENT LAND, 397,615 ACRES.

Much good grazing land. Land all requires irrigation for agriculture. Water obtained from lakes, wells and streams. Much good agricultural land where water can be obtained.

KINGS COUNTY: COUNTY SEAT, HANFORD; LAND OFFICES, VISALIA AND OAKLAND. AREA UNRESERVED GOVERNMENT LANDS, 43,827 ACRES.

Arid plains and mountainous lands. Where land can be irrigated very productive.

LOS ANGELES COUNTY: COUNTY SEAT, LOS ANGELES; LAND OFFICE, LOS ANGELES. AREA UNRESERVED GOVERNMENT LAND, 858,208 ACRES.

Adapted to grazing and (where water can be obtained) to agriculture. Horticulture most prominent industry. Water largely obtained from artesian wells. Irrigation system in almost every community, and a portion of this county will be covered by Yuma irrigation project of the National Government. Canals in eastern portion accessible to vacant lands.

MADERA COUNTY: COUNTY SEAT, MADERA; LAND OFFICE, SACRAMENTO. AREA UNRESERVED GOVERNMENT LAND, 89,100 ACRES.

Sections in which Government land is open for entry

Land adapted to farming and grazing. Requires irrigation for farming. Water obtained from lakes and streams. Ditches in private ownership. Good grazing lands for sheep and cattle.

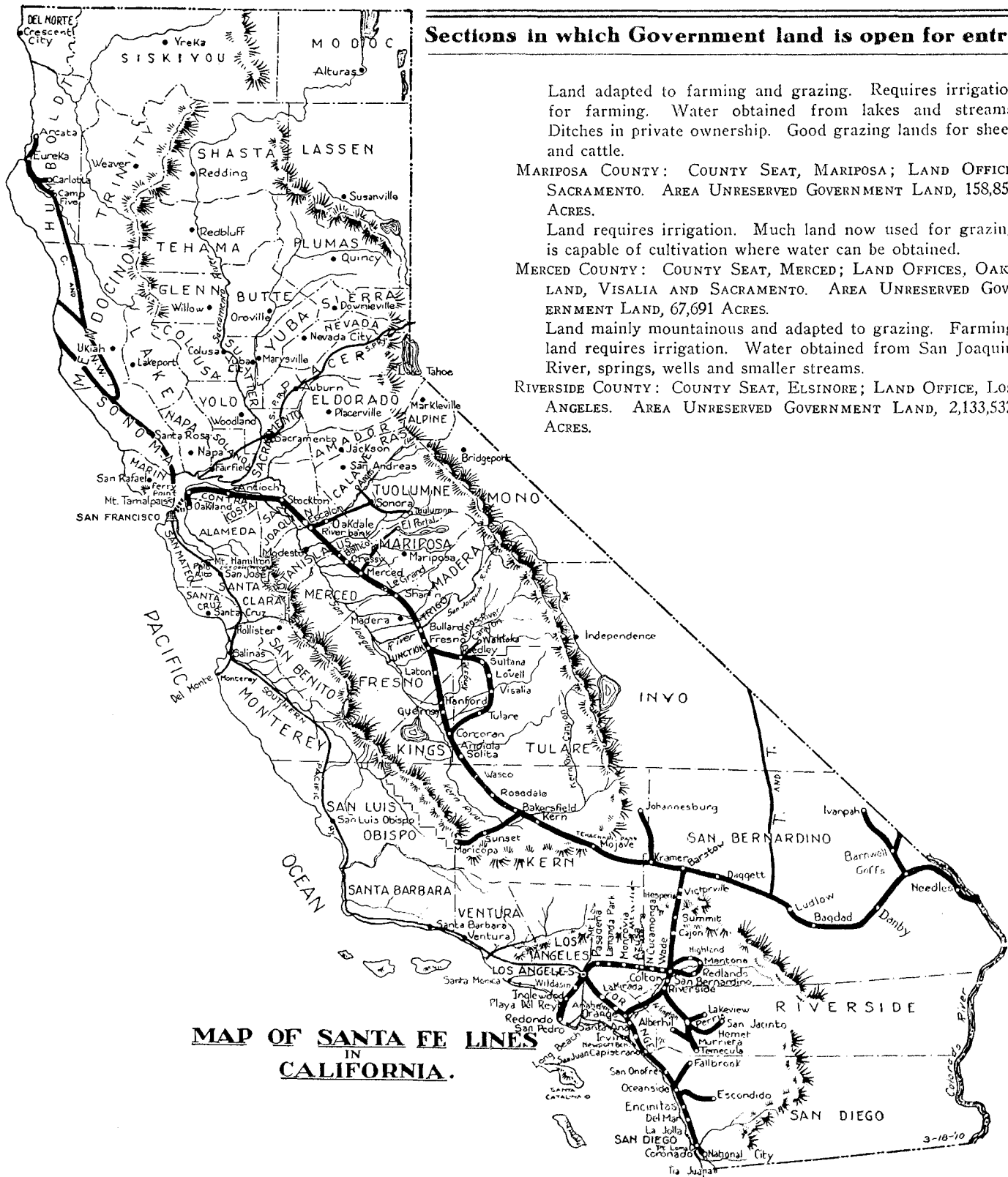
MARIPOSA COUNTY: COUNTY SEAT, MARIPOSA; LAND OFFICE, SACRAMENTO. AREA UNRESERVED GOVERNMENT LAND, 158,853 ACRES.

Land requires irrigation. Much land now used for grazing is capable of cultivation where water can be obtained.

MERCED COUNTY: COUNTY SEAT, MERCED; LAND OFFICES, OAKLAND, VISALIA AND SACRAMENTO. AREA UNRESERVED GOVERNMENT LAND, 67,691 ACRES.

Land mainly mountainous and adapted to grazing. Farming land requires irrigation. Water obtained from San Joaquin River, springs, wells and smaller streams.

RIVERSIDE COUNTY: COUNTY SEAT, ELSINORE; LAND OFFICE, LOS ANGELES. AREA UNRESERVED GOVERNMENT LAND, 2,133,537 ACRES.



**MAP OF SANTA FE LINES
IN
CALIFORNIA.**

Sections in which Government land is open for entry

Agricultural land in various parts of the county. Requires irrigation. Canals in operation along the Colorado River. Artesian wells easily sunk. Soil very productive when irrigated and grows excellent fruit.

SAN BERNARDINO COUNTY: COUNTY SEAT SAN BERNARDINO; LAND OFFICES, LOS ANGELES AND INDEPENDENCE. AREA UNRESERVED GOVERNMENT LAND, 8,352,507 ACRES.

Land mountainous, rolling and in some parts level and desert. Adapted to grazing, also to agriculture and horticulture where water can be obtained. Irrigation projects now in contemplation will reclaim large area.

SAN DIEGO COUNTY: COUNTY SEAT SAN DIEGO; LAND OFFICE, LOS ANGELES. AREA UNRESERVED GOVERNMENT LAND, 491,993 ACRES.

Mountainous, rolling, desert land, adapted to general agriculture, horticulture and stock raising where irrigation is secured. Water obtained from irrigation canals. Several private irrigation enterprises. Good grazing land.

STANISLAUS COUNTY: COUNTY SEAT, MODESTO; LAND OFFICE, SACRAMENTO. AREA UNRESERVED GOVERNMENT LAND, 29,317 ACRES.

Partly mountainous. Good farming and grazing land. Soil very productive, especially when under irrigation.

TULARE COUNTY: COUNTY SEAT, VISALIA; LAND OFFICE, VISALIA. AREA UNRESERVED GOVERNMENT LAND, 72,569 ACRES.

Land mostly mountainous and of little value. Some arid land susceptible of irrigation. Land very fertile when irrigated. Considerable good grazing land for sheep and cattle.

Texas

There are no United States Government lands in the State of Texas. The vacant lands all belong to the State Commonwealth and are sold at prices and on terms which will be made known upon application to the State Land Commissioner, Austin, Texas.

DRY FARMING

Large areas of the Government lands in the Southwest are on mesas and plains, where the rainfall is light and artificial irrigation impossible. Nearby may be valleys traversed by streams and watered from these streams by gravity irrigation, as for example, the Arkansas valley of Kansas and Colorado; the Pecos, the Rio Grande, the Mimbres and the Canadian valleys of New Mexico; the Colorado, the Little Colorado, and the Salt River valleys of Arizona; and the San Joaquin valley of California; but the adjacent highlands, or the remote plains cannot be reached by this means.

For a long time these higher lands were neglected, until it was discovered that by conserving the natural rainfall they can be made productive. This is the "Campbell method." It is not new, for it has been practiced in other parts of the world since the beginning of agriculture; but, until population began to crowd the public domain, it has not been needed on this continent, and it is called the "Campbell method" only because Prof.

H. W. Campbell, of Nebraska, has been applying it on his farms and teaching it to his neighbors and others, since he adopted it in Dakota, twenty-five years ago.

This was after a bad crop failure on land that for the three previous seasons had yielded bountifully by the ordinary method. It was a dry season, but by conserving the little water that fell, he produced large crops, while his neighbors produced nothing. This so impressed him that ever since he has been practicing and preaching "scientific farming." No matter where his farms may be—in the "rainbelt" or in semi-arid regions—he applies the "Campbell method," and he always has better crops than his neighbors produce. If it be a season of limited moisture in the "rainbelt," he gets good crops, while his neighbors fail. He has had this experience so often, that it forms the most interesting part of his lecture. It requires more labor, of course, but there can be no excellence without great labor, and the reward is certainty of crops in dry seasons, certainty of crops in semi-arid regions, and better crops in all conditions of climate, than neighbors, who employ the "old way," produce.

Briefly stated, Mr. Campbell's method is to permit no evaporation through the earth, but to force all the moisture, or so much as is necessary, to find its way through the plant. This is done by planting deeply, packing the soil below and keeping it loose above, thereby conserving every particle of moisture that enters the ground. By this method, wherever soil lies, crops may be produced. By it the mesas of the Las Vegas land grant, which is 6,700 feet above sea level, have become productive of good crops, and settlers are buying farms there. This is not the only instance of the value of Campbell method in the semi-arid region. All over the Southwest it is equally effective, and by it soon all the plains, where the soil is good, likewise will be subdued and subjected to the uses of mankind.

On the pages following are some interesting articles on the subject of dry farming. One is by Prof. Campbell himself. Another is by Prof. J. D. Tinsley, of the New Mexico Experiment Station. Prof. Tinsley's article was written after a careful study of dry farming along the lines of the Santa Fe in New Mexico. The article on "Dry Farming in Colorado," is by E. R. Parsons, a practical farmer who says it is the only way to farm. Mr. M. A. Carleton, cerealist of the United States Department of Agriculture, tells what cereals are best adapted to the Southwest. Altogether these articles are an interesting discussion of the subject.

The Campbell System—What Is It?

(By Prof. H. W. Campbell, Lincoln, Nebraska.)

The Campbell system is a combination of principles and methods, which, when fully understood and correctly applied by the farmer, brings about mechanically a physical condition of the soil that not only is most favorable to the production of plant elements, but is conducive to the development of a large and complete root system.

It should first be fully and clearly understood that, to grow strong, healthy and prolific plants, there must be a preparation of the soil that will under any and all climatic conditions be

The Campbell System of Dry Farming

favorable, not only to the growth and support of healthy roots, but to the development of ample and available fertility.

Second, that Nature provides all the necessary elements in ample quantities to produce large crops on all the good soils of the great semi-arid belt in any and all years, but it is all important, that while Nature does provide these elements, she does not provide the soil conditions by which they may be combined in proper quantities to obtain even fair results except in the most favorable seasons. It is left for man alone, by his own observation and study, to ascertain what he should do to the soil, when and how he should do it, that he may bring about that ideal physical condition by which the elements of both air and water may so mingle in the soil that the combined forces of light and heat may cause Mother Earth to yield not only two blades where one grew before, but to get an increase of sixty and a hundred-fold or more.

Its basic principles apply to all sections of the country and in all kinds of farming either in the more humid sections or under irrigation, but it is most vital to successful farming in that section where the rainfall is more or less uncertain as to the time and quantity. Every farmer knows it is easy to grow good crops in good years of the timely and ample rainfall, but to grow a large crop of any kind during seasons of very light and untimely rainfall, with high temperature and excessively strong south wind, is quite another thing. However, it is under the latter conditions that the Campbell system has produced its most marvelous results. But this is not done except where the previous year's work has been performed by the farmer in full anticipation of a dry year. Yet suppose the work has been carefully done in anticipations of very drouthy conditions and

the season should be one of ample rainfall, the labor is by no means lost, for the crop yield will be proportionally large. In short, it is the key to extra good crops in favorable years and good crops in the most drouthy years.

What must or can the farmer do to bring about such marvelous results?

Briefly, the Campbell system looks to the perfect treatment of the soil in preparation of the seeding; and this preparation includes cultivation especially with a view to preventing waste of moisture by evaporation or otherwise, the treatment of the soil with a view to development of available fertility through maintaining right physical conditions, and such possible cultivation of the growing crops as will continue this perfect condition throughout the year.

The Campbell system of soil culture has stood the last and final test—it has delivered the goods, its results are unquestioned by those who have seen.

The millions of acres of splendid soil in the so-called semi-arid region need but intelligent treatment and they will yield paying crops. It has long been known that this region has the best soil in the world; how to make it productive under conditions existing is the problem newly solved by the Campbell system. This soil has the elements for highest degree of productivity.

It is rich in minerals and in humus, it is porous and deep, it has light, heat, air and moisture sufficient; the lack of proper knowledge of how to control and utilize these elements has been the cause of many a sad disappointment in this great belt during years gone by. The man today who rests his hopes and faith against the theory that the rainbelt has permanently moved westward or that the old-time dry year will never return, may awake some morning confronted with the sad old problem.

Notwithstanding the fact that these old time drouthy conditions may come, we will herald the late Horace Greeley's advice—"Go West Young Man. But go prepared with a full knowledge of what to do, when and how to do it."

H. W. CAMPBELL.

Dry Farming in New Mexico

(By J. D. Tinsley, Soil Physicist and Field Expert, New Mexico Experiment Station.)

Dry farming is a term which has been introduced in recent years to designate an agricultural method differing from the production of crops by an abundance of rainfall and by irrigation. This farming with a limited rainfall, while having become widely known only within the last few years, is not a new thing in New Mexico; for in certain sections the Indians and Mexicans have practiced it for a long time, especially with corn and beans. The Mexican name for it is *temporal* farming, to distinguish it from



Many of the Field Crops can be successfully grown according to "Dry Farming" Methods in the Agricultural Sections of New Mexico.

Dry Farming in New Mexico

farming by irrigation. Dry farming conditions range from the conditions found in humid climates to those where the rainfall is so small that only an occasional crop can be obtained.

The fundamental ideas of dry farming are the storage of the limited rainfall in the soil and the growing of those varieties of crops which can mature with a minimum amount of water. It does not at all imply the growing of crops without water.

There are two principal cropping methods depending on the amount of rain: that of growing a crop every year and that of only planting once in two years, saving the moisture from the first to assist the crop during the second season. The first of these methods only has been used in New Mexico.

Dry Farming Localities

The localities where dry farming is possible may be roughly divided into two classes. The first class has an altitude of about 4,000 feet and the rainfall is associated with the proximity of the humid region. The second class embraces the high plateaus and mountains with altitudes of 6,000 feet and over and the rain is due to the condensation of the atmospheric moisture by the mountains. These districts are mainly situated on the east and south sides of the ranges.

To the first class belong practically the whole of Roosevelt County and the southeastern part of Guadalupe County, which are traversed by the Eastern Railway of New Mexico and the Belen Cutoff.

Portales on the Eastern Railway of New Mexico was the first dry farming district settled in New Mexico, and Elida, a few miles south, was settled soon afterward. Dry farming was begun near Texico at about the same time, and from these places

as centers the settlers have spread out until there is very little government land left within twenty-five miles of the railroad.

The Belen Cutoff, which will soon be ready for regular traffic, has opened up the country from Texico west to the Pecos river and this district will possibly be extended some distance further west in Guadalupe county. This section is settling up rapidly, but its western portion has not been under cultivation long enough to demonstrate the possibilities of that part.

In the Plateau districts, going further west along the Cutoff, the southern portion of the Estancia valley is reached in the vicinity of Willard, which lies near the foot of the Manzano Mountains, on their east side, at an altitude of about 6,000 feet. There are quite a number of farms here, and while the seasons are a little short, due to the altitude, all of the ordinary crops do well.

From Willard the country rises to the west, until the divide is reached at Mountainair, in the vicinity of which there is quite a farming community, and there is a possible farming country westward, practically to the east side of Abo pass.

In the western part of the territory along the coast line of the Santa Fe Railway, in Valencia and McKinley counties, beginning at Grant station and extending to Gallup, there is a district possibly 30 miles wide that will probably be developed by dry farming. The most of it is in private ownership, Indian reservations, or otherwise withdrawn from homestead entry, but there is a considerable area that can be filed on and possibly much of the other could be purchased. It is known as the Zuni mountain country. The Indians have been quite successful with maize and beans and there are a few whites farming there with

good results. This district lies at altitudes of from 6,000 to 8,000 feet.

The dry farming belt along the main line of the Santa Fe occupies the high plateau and adjacent mountains in San Miguel, Mora and Colfax counties. Crops have been grown by the Mexicans in this district, by very crude farming methods, ever since the country was settled, but it is only in the past few years that the development has begun by the use of real dry farming methods. The vicinity of Las Vegas is the principal locality that is being systematically developed at present, but at Springer, Maxwell City and other places a beginning has been made.

Johnson's Mesa affords a fine illustration of what can be accomplished at very high altitude by dry farming. This is a broad mesa about twenty miles east of Raton with an elevation of 8,000 feet above the sea level. There is a population of 2,000 and about 10,000 acres are under cultivation. The seasons are short, but oats, wheat, rye, barley and potatoes are grown. Land planted fourteen years successively in oats now yields forty bushels per acre.



These same results can be obtained in many sections of New Mexico.

The Importance of Rain in Dry Farming

Rainfall

Two of the most important factors in dry farming are the amount and distribution of the rainfall through the growing season. It is almost impossible to state definitely either the maximum or minimum limits of rainfall, between which the production of a crop each season by dry farming can be successfully carried on in New Mexico; but they are approximately between 15 and 25 inches, and the greater part of this precipitation should come during the growing season. In parts of New Mexico these conditions are very well fulfilled, for July and August are considered the rainy season—about one-third of the annual amount falls in these two months. Good showers may be expected in May and June, and they sometimes occur in April. There are often good rains in September and October and these with occasional snows in winter make winter grain a possibility.

To insure a successful crop, at least 12 inches should fall between April and September and the more than 12 inches the better.

The rainfall usually increases with the altitude but the temperature decreases so that at an altitude of 7,000 feet or over, while the rainfall is usually sufficient to insure crops, the seasons are short and only a limited number of crops can be grown.

Soils

There is a great variation in the physical characters of the soils in the different localities, and also in different places in the same locality. In many places there are large areas of almost ideal soil for dry farming. This soil consists of a sandy loam to a depth of one or two feet underlaid by a fairly heavy clay. Considerable difference of opinion as to the most desirable kind of soil has been shown by the recent settlers. Many have selected the darker colored soils of rather heavy texture—loams, clay loams and clays—considering them to be the best. The writer, after extensive observations on the different areas, has failed to find such soils better adapted to dry farming than the lighter colored sandy loams, especially where these are underlaid by clay. The heavier soils may in the course of years prove to be more lasting in their fertility, but this is probably offset by their being more difficult to get into good condition and not taking up water so rapidly as the lighter soil, nor retaining it as well. The principal objection to the sandy loam soils is that they blow badly under the hard spring winds. The writer has not observed any considerable areas in any of the districts which seemed to be lacking in fertility, provided the water supply be sufficient.

Soil Moisture

Water in the soil may take one of three forms known as Free Water, Capillary Water, and Hygroscopic Water. The last two are generally called soil moisture.



Crops grown under "Dry Farming" near Las Vegas.

Free Water.—When rain falls on a soil much of the water finds its way down through the larger spaces and while moving in this way under the influence of gravity is known as free or gravitational water. This water finally soaks in and distributes itself in the form of films on the soil grains and partially fills the little spaces between the grains. In this condition it is known as capillary water. When all of the grains are coated and the most of the little spaces are filled, which is the case in the upper layers of a soil immediately after a rain, the soil is said to be saturated.

Capillary Water.—Capillary water is that which forms films of varying thickness around the soil grains and may fill the minute spaces between them. It is held to the surface of the grains by the force of adhesion and its tendency is always to move toward the place where the films are thinnest—i. e., where the soil is driest—whether this be up, down or sidewise. This movement along the surface of the soil particles is similar to the rise of a liquid in a tube of fine bore or the rise of oil in a lamp wick, and to this kind of motion of a liquid the term "capillary movement" or "capillarity" is applied.

The loss of the moisture from the soil through surface evaporation is principally due to capillary movement, so that one of the chief aims of the dry farmer is to prevent capillarity from carrying the moisture to the surface of the soil.

Experiments teach us that the smaller a tube the higher water will rise in it, and, conversely, the larger a tube the less the rise; and also that the smaller the tube the slower the rise and the larger the faster. There is a certain size of tube in which there will be a satisfactory combination between speed and height of rise and this is reached in a thoroughly tilled soil when a roller is run over it while it is moist, or when the surface is run together

The different forms of Soil Moisture

by a heavy shower. In this condition a soil will lose its moisture most rapidly. If the soil is very loose, or if it is too compact, the movement will be very slow. The movement into a loose dry layer is slower than into a moist one. Whenever the moisture reaches the surface of the soil it is at once evaporated into the air.

The above explanations lead us to conclude that, if we wish to hold moisture in the soil, we must have the upper layer loose, and the drier the better, in order to prevent capillary movement to the surface; and at the same time the lower layer should be compacted sufficiently to allow a free movement of the moisture to the roots of the plants.

Free water tends to shut the air out of the soil while there is considerable room for air between the films of the capillary water. It is from the capillary water that plant roots derive their water supply and with it they take up the various food ingredients dissolved in it.

Hygroscopic Water.—This is the moisture that is retained in a soil when it is air dry and it varies in amount with the quantity of moisture in the air and its temperature. The amount is so small in the soils, especially the sandy loams, of the dry farming districts that it is of very little importance.

Sod Land.—It is difficult to state the best method of dealing with sod land, for so much depends on the nature of the soil and of the sod, on the time when it must be broken and the amount of rain during the following season.

Plowing

If possible, break the land in the fall to a depth of from 4 to 6 inches and cut it down fairly smooth with a disc harrow and let it lie until spring. Never let the land lie turned up rough very long, since in that condition it will lose moisture more

rapidly than if it had not been plowed at all. The disc should if possible follow the turning plow and if this cannot be done then by all means harrow in the afternoon what was plowed in the morning. In the spring, it may be plowed and disked down as fine as possible; or, instead of plowing, it may be double disked, setting the disc so as to lap one-half, and then seeded. Much land was plowed in New Mexico in the fall and winter of 1906-07 and left rough all winter and if a snow had not come in April—which does not occur often—it would have been difficult to have gotten the land in shape until quite late, because it had dried out so much that it was harder than the unbroken land and contained less moisture.

Another method adapted to spring breaking is to plow shallow, 2 to 4 inches, and disc it up as finely as possible and plant in this shallow seed bed.

A third method, which has given fair success with some crops in seasons having the heaviest rainfall, is to turn the sod 2 to 4 inches and plant the seed about every fourth furrow covering it with the sod from the next furrow. It seems to be a matter of doing almost anything to get the sod out of the way and none of the methods approach very nearly to the ideal for either getting the water into the soil or keeping it there.

Old Land.—In breaking old land the depth should be regulated largely by the character of the soil. Two objects should be kept in view: First, to get a deep layer in which roots can develop freely, and the other, to get a layer of soil that will absorb the rain freely. To attain these ends, heavy soils should be plowed more deeply than lighter ones, for in many cases the light soils are naturally in almost as good tilth as the heavy soils can ever be brought by working them.

One of the most important objects in breaking the land is to provide a reservoir that will hold as much as possible of the heavy showers characteristic of the country.

Another important matter in the preparation of the seed bed is that of getting the lower portion of the plowed soil sufficiently compacted. The reason for this is that the plowed layer of soil must be put into such a condition that capillarity will bring up into it the moisture from the soil below and this will not take place if the soil is too loose. If the plowed layer is too loose, it will act as a mulch, soon dry out, and the crop will suffer. There are several methods of getting this necessary compaction. The soil would settle if given time enough, but unless this was aided by a heavy shower it would require a long time. Rolling the surface would help some, but this compacts at the wrong place; for it is the lower and not the upper part that should be firmed. The disc harrow is quite valuable for this purpose. Mr. Campbell strongly urges the use of the sub-surface packer. This seems to be an ideal tool for the purpose, but very few of them have been used in New Mexico.



Wheat Field near Las Vegas.

Cultivation

The seed bed and soil reservoir having been properly prepared, the next important matter is the subsequent cultivation; for it is by this means that the moisture will be retained in the soil. A dry loose layer of soil on the surface is a poor conductor of water and one of the principal objects of cultivation is to maintain such a layer—called a soil mulch. All are familiar with the use of straw, litter, and similar materials for mulching on a small scale. These would be too expensive for a whole farm, and fortunately they are not necessary, for the soil mulch is much cheaper and very effective if kept in a proper condition. This layer may vary in thickness from 1 to 3 inches, but it must be kept loose. It is very important to avoid turning up the moist soil to the surface to dry out and the letting of dry surface soil down to take away some of the moisture.

When land has once been put into good condition, it need not and must not be stirred below the depth of the mulch while the crop is growing. This surface cultivation to maintain the mulch is the most important point in which the methods of dry farming differ from those used in humid regions. This may seem to the farmer accustomed to humid conditions like very poor cultivation, but it is one of the secrets of success in dry farming.

While the crops are growing the surface should be stirred after each rain just as soon as the soil is dry enough to work, and in periods of drought the stirring should be done frequently. Even when there is no crop on the land the surface should be kept loose. Very good crops have been obtained in New Mexico for the past six years with very little attention to the details of cultivation, because of the good rains; but should dry seasons come the value of proper cultivation will be quickly seen.

Seeding and Planting

The planting should be deep in order to get the seed into the moisture below the soil mulch. For this reason the use of a drill or planter is much better than sowing broadcast and plowing or harrowing in the seed. Listing has given very satisfactory results with corn and members of the sorghum group. Sometimes the seed may have to be planted quite deep in order to reach the moisture but, except in the case of very small seed, there is little danger of their not being able to reach the surface, because of the loose condition of the mulch. With small seed, or when there is quite a thick mulch layer with plenty of moisture below, it may be advisable to roll the land and thus compact the surface in order to bring up the moisture. This will tend to a loss of moisture, so the surface should be stirred again just as soon as the condition of the plants will permit.

Winter wheat should be sown by September 15, in order to take advantage of the September and October rains. At the lower altitudes, spring seeding and planting should be done early in April to be ready for early rains, and if these do not come the seed will probably not spoil before the later rains reach them. At the higher altitudes it is necessary to plant later, waiting until the soil has warmed up and the danger from late frosts is passed.

Amount of Seed.—The amount of seed used should be only

one-third to one-half that usually sown in the humid regions, because there is moisture enough to mature just so many plants, and if this moisture is divided among double the number of plants there will not be enough to fully mature them. The amount of seed should be proportioned to the rainfall of the locality.

Crops and Yields

The following are the principal crops grown by dry farming in New Mexico. It has proved almost impossible to get accurate data on the yields of the various crops for the different localities, and the figures given are only estimates for average land under favorable conditions:

Cereals.—Winter and spring wheat, oats, rye, and barley have all been grown in the different sections, but scarcely to the extent that their importance as a money crop would warrant. Wheat may be expected to yield 10 to 15 bushels. Oats have been more extensively grown, especially at the higher altitude. They are frequently cut for hay yielding about two tons per acre. Yield of grain 40 bushels per acre. Yields as high as 85 bushels have been reported under most favorable conditions. Rye and barley are grown more for hay than for grain and should give about two tons per acre.

Indian Corn is grown on nearly every farm with very variable success. An average of 25 bushels should be considered a satisfactory yield, although as high as 50 bushels has been reported.

Sorghums.—At the lower altitudes the sorghums, both saccharine and non-saccharine, are extensively grown. The saccharine varieties, generally called cane or sorghum, are valuable chiefly for forage. The non-saccharine varieties are grown most extensively in New Mexico because they are valuable for both grain and forage. Of these milo maize produces the greatest proportion of grain to stover, is probably the most drought resistant, and matures in a little less time. The sorghum group will grow with less water than any other dry farming crop. Two to four tons is a satisfactory yield.

Broom Corn is being grown in the vicinity of Portales.

Milletts.—The millets are a valuable crop, but have not been extensively grown. Their importance will be more fully recognized in the future. Yield 1 to 2 tons per acre.

Legumes.—Alfalfa has not been planted extensively enough to prove whether it will be successful or not, but a few persons have reported a satisfactory growth. The Mexican bean has been very widely planted and has proved to be one of the most satisfactory crops. It should yield 600 to 1,000 pounds per acre. Cow peas and soy beans have given satisfactory results in eastern New Mexico and the Canadian or Colorado field pea is worthy of careful trial.

Vegetables.—Practically all of the common garden vegetables have been widely and successfully grown. Irish potatoes have not proven successful at the lower altitudes, which is also true under irrigation, but at 7,000 feet and over they have produced well and been of fine quality.

Melons, squash and pumpkins have given very fine yields.

Trees.—Large numbers of different fruit and shade trees have been planted and in the most cases have made a satisfactory

What can be Raised by Dry Farming

growth. They should receive very careful cultivation for the first few years after planting. Very few of the fruit trees have been planted long enough to be in bearing so that no data is available as to the quantity or quality of the fruit.

Implements

The usual implements used in the humid regions will be found necessary for dry farming with the possible addition of the sub-surface packer. The most essential are, the mouldboard or disc plow for breaking; the disc harrow for pulverizing and partial repacking; the spike toothed harrow for smoothing the surface of the ground and for general cultivation until the crops get high enough to be damaged by it; the acme harrow is excellent for fining the surface; the spring toothed cultivator or ordinary cultivator with very narrow shovels for cultivating corn and similar crops after they have grown too large to be harrowed. Avoid the use of the shovel plow and the broad shovels of the cultivator, for these will generally run too deep, turn up the moist soil to the sun, and throw the dried dirt to the roots of the plants. They are splendid for drying out a soil, but very poor tools for saving moisture.

Among drills the closed heel shoe drill is probably the best, although the disc drill or press drill may be used. Any good form of planter may be used for planting corn and other cultivated crops.

General Remarks

In the past, dry farming in New Mexico has been mainly in the experimental stage, the work was new and the settlers were dealing with to them untried conditions of rainfall on a virgin soil. Not only had the farming side of the matter to be worked out, but towns and ranch houses had to be built and domestic water supplies developed. These settlers naturally planted those crops which would be surest to mature and furnish material for immediate consumption, especially for their stock.

For the past two years, in several sections, the influx of new settlers has been so great that those on the ground have found an immediate market for their products at excellent prices. The seasons have been good and the general conditions have been about all that could be desired.

The time will soon come when the products of the increasing acreage under cultivation will more than supply the home demand and markets and the consequent lowering of prices will force the people to pay much more attention to the disposal of their crops. This will necessitate more care in the selection of the crops to be grown and improvement in farming methods.

The ultimate direction in which the industry will develop will probably be stockfeeding, dairying and the growing of small grain. There is sufficient range in the territory to produce the frames of all the cattle and sheep that the farmers can fatten and this industry together with dairying and hog raising assures the utilization of all the feed crops that can be raised.

The subject is more fully discussed in bulletin No. 61 of the New Mexico Experiment Station, which can be obtained free by applying to "The Director, Agricultural College, N. M."

J. D. TINSLEY,

Soil Physicist and Field Expert, New Mexico Experiment Station

Dry Farming in Colorado

(By E. R. Parsons, Parker, Colorado.)

There is nothing new in dry farming, for it is practiced all over the world wherever necessity compels. Vast tracts of dry land have been turned to profitable account in Russia, simply by the use of Durum wheat, which was originally brought there from the dry lands of Central Asia. In Tuchestan we find an alfalfa which will stand more drought than any variety we can produce in America. Dry farming is carried on in South Africa, which sent us the kafir corn, and in Australia, which gave us the white Australian, the greatest drought resisting corn known.

For centuries Egypt subsisted on dry-raised produce, which was planted immediately after the subsidence of the Nile overflow and cultivated by hand, until the whole surface was covered with a moisture conserving mulch of fine particles of soil, which kept the water in until the crops matured without a single drop of rain. With all the accumulated science of centuries, and the best agricultural machinery on earth, cannot we do as well as the ancient Egyptians? We undoubtedly can, for, by fallowing our land, we first obtain the necessary moisture and then go to work and raise a crop on it; and, moreover, while the crop is in the growing, it invariably receives some moisture, usually over an inch a month, which is more than actually is required.

Why is it that we are really behind the times in this matter of dry farming? Because the pressure of the population westward is only just beginning to be felt in the agricultural districts, and the fertile lands of the middle west, which will produce fine crops with only a little scratching with the plow, are at last about all occupied and prices consequently high; although the market prices of produce are much lower than in the west. The rolling prairies, the benches, the mesas, the slopes of the hills are all good for dry farming, if not better than the hot bottom lands. The chief requisite is plenty of good deep soil, with a subsoil not loose enough to allow drainage.

There are many beautiful stretches of prairie in Colorado, which by the magic touch of scientific farming can be transformed into a garden of delight. Such a one is the Valley of



WHEAT ON PARSON'S RANCH.

Dry raised Red Turkey Winter Wheat, 38 bu. per acre. This land cropped to grain 20 years. Soil is reddish clay loam.

the Arkansas. Here we find all the necessary conditions present for successful dry farming, and in addition a climate adapted not only to every variety of crop and vegetable, but also to fruit and shade trees. The dry farm settler cannot only raise crops, but can have his garden, his fruit, his flowers and his shade trees, exactly as if he irrigated; and at half the cost if he follows the principles of scientific farming. Cottonwoods, maples and willows, however, should not be planted, except on moist land.

Almost any forest or fruit tree can be raised without irrigation. The locust, elm, catalpa, litrez, poplar, ash, all do well; also pines, firs and spruces in gravelly soil. The Montmorency cherry, which is a fine large tree to plant near the house, stands any amount of dry weather and is useful as well as ornamental. In planting trees they must never be potholed in hard ground, for the hard ground being of superior capillarity to the soft ground round the trees, draws all the moisture out, and, even if watered by hand, the trees usually die. A whole row should be planted and kept thoroughly cultivated. After they grow large and shade the ground very little cultivation is necessary.

The new settler will find nothing better to produce than winter wheat. In order to raise 100 acres of this wheat every year, he should have two patches of 100 acres each and they should be cropped alternately. Where land is cheap this is easy to do with less than half the work of irrigating. As soon as a crop is taken off the land it should be disked or plowed, if moist enough to prevent its drying out by evaporation. Then as soon as the weeds are well up in the spring it should be plowed deeply or whatever depth experience shows is best suited to the locality. On my farm the deeper the plowing the better the results always. After the spring plowing it should be packed or disked and harrowed and kept in tith until August, when it should be planted. A few light harrowings the following spring will result in a fine crop in July. By this method of fallowing each patch alternate seasons, not only an enormous amount of moisture is collected, but what is of equal importance plant food and good rich soil worked in this manner will last for generations. By this process, the necessity for crop rotation is almost obviated, should the soil become weak, the nitrogen could be easily restored by a few years cropping to alfalfa.

For any crop it always pays to fallow a piece of land for even a few months before planting, and shallow plowed land should be fallowed longer than deep-plowed land. For instance, at the end of a year it will be found that deep-plowed land, fallowed, will have gathered nearly double the amount of the moisture that has been stored by the shallow-plowed land.

If it be found necessary to soak up a piece of land in a hurry by winter fallowing, it may be done by my system of snow fences. I borrowed the idea from the railroads. Every twenty feet or so an elevated ridge a foot or more high should be thrown up by back furrowing with the plow. These ridges must run at right angles to the path of the blizzards, usually more or less east and west. They will catch immense quantities of snow in every storm, throwing a complete veil of snowdrifts over the land several times during the winter months. An acre an hour can



Apple orchard on Parson's Ranch, two bushels per tree.

be prepared in this manner and the amount of snow caught will depend on the height of the ridges, usually almost twice as much as when the land is left simply rough plowed.

We prepare an orchard land for planting by plowing a foot deep and fallowing for a year previous to planting; keeping all weeds out. The holes are dug in the fall right in the dead furrows which by a simple trick in laying off the lands are made to come exactly where the rows of trees are to be. The winter snows will do their work and by spring the dead furrows and holes will be soaked down several feet, every blizzard filling them up. No dry year or series of dry years can injure an orchard planted after this fashion if the top is kept cultivated, for it takes a year without a single drop of rain to dry out ten inches. The rule is first to get your moisture, then order your trees. The more room allowed the trees, the more their roots spread and the more moisture they gather.

Apple trees planted 40 feet apart each way, which is about right for apples, receive with a precipitation of 10 inches over 40 tons of water per annum. Nature clearly does her part. All we have to do is to do ours. Cherries and plums should be planted about 20 feet apart and small fruits 8 to 10. All trees in the west live longer if low headed, especially plums; and if the trunks are much exposed, they should be wrapped or shaded with a board on the south side of the tree. Young trees must also be protected from rabbits in winter.

Some good varieties are: Apples, Jonathan, Rome Beauty, Yellow Transparent, Red June and any crab; plums, Lombard, German Prune, Missouri Greengage; cherries, Montmorency and Morello. Any fruit tree can be successfully raised without irrigation. My dry orchard twenty miles south of Denver averages me about \$100 an acre annually, taking good fruit years with the bad.

On our rolling prairies and often on our flat top hills we sometimes find water at ten or fifteen feet, although the vegetation above shows no signs of it. Underneath the soil the solid clay, or lava, or traprock, is often found in the form of a basin. The ground above, especially clay soil, when not cultivated, cracks wide open in the heat of the summer and allows the water from the cloudbursts and freshets to pass down to the solid bottom.

Cereals of the Southwest

Although water at this depth is of little use for ordinary crops, it is easily accessible for alfalfa, whose roots will reach it in a year or so and then produce three cuttings every season.

Alfalfa will do well almost anywhere if the soil is deep and rich. It can also be planted on sod plowed eight or nine inches and disked until the surface is as fine as old land. It should always be planted early and never under any circumstances with any other crop. After it is well established, disking will kill out the weeds and cultivate the crop before it starts in the spring.

A settler going on new land often wonders what to do with his sod. Some men plow it a few inches and leave it for a season to rot and become full of weeds. It is better, in my opinion, if one has sufficient horse power, to plow it clear under, leaving plenty of loose dirt on top and raise a crop on it after fallowing it long enough to secure enough moisture. For sod once soaked up holds its moisture remarkably well while the rotting process is proceeding, and the finest crops can be raised on it in Colorado if it is wisked fine enough to cultivate thoroughly. On my ranch we often crop it to corn, disking the surface as soon as the frost is out of the ground. Then we plow it under eight or nine inches, afterward disking the underside which is now uppermost until there is enough loose soil to make a good seed bed. Then we leave it until the weeds come up, when we disc it and harrow it and plant the corn. We plant one kernel in a hill for corn, or two for fodder. During the early spring months the soft snows and rains are usually sufficient to thoroughly soak up a field of this description and a bountiful yield is generally the result. We have raised lots of blue ribbon corn this way.

When I came to Colorado in 1880, I had already dry-farmed in South Africa for five years, and knew about how to proceed. Even at that date dry-farming was practiced here and there by different men, many of whom are wealthy now. In thirty years I have never lost a crop or a tree by drought. Everybody would have trees if they knew how easy they are to raise. Their roots go deep with cultivating and no dry weather can affect them, for they are living on the moisture that fell a year or two before.

The most important item in the equipment of the new settler



ALFALFA ON PARSON'S RANCH.
Dry raised Alfalfa before cutting; 600 feet to water.

is horses, for the foundation of dry farming is deep plowing and it is waste of time to farm with ponies.

The best system of conserving moisture has been admirably explained by Mr. Campbell of Nebraska, and any one can follow it. At the same time I must explain that our heavy clay or adobe soils need deeper plowing, but less packing, than the light sandy loams of Eastern Colorado and Western Nebraska. The deserts of Utah, to which Colorado and New Mexico is a garden of Eden by comparison, are now being successfully farmed and bountiful crops produced largely through the efforts of Professor Jardine, lately of the Agricultural College of that State, but now of Washington, D. C., who recommends plowing eight inches to a foot. Last season the Hon. G. L. Farrel of Utah by plowing eight inches and subsoiling six raised on an average over fifty-five bushels of winter wheat per acre on a 200-acre patch.

The question of how deep it pays to plow or subsoil must depend largely on the economic conditions prevailing on the farm concerned. I consider dry farming not only one of the surest businesses a man can undertake, but the most delightful form of farming in the world. While the farmers in other states are wallowing in mud and slush, we can be plowing and doing farm work the year round. It should also be noted that a man who is making ten dollars an acre off five dollar land is making twenty times as much off his investment as the man in Ohio or Illinois who is clearing ten dollars an acre off hundred-dollar land.

E. R. PARSONS.

Cereals of the Southwest

(By M. A. Carleton, Cerealist U. S. Department of Agriculture.)

Two general classes of wheat can be grown in the southwest, that is, either spring or winter wheat. Winter wheat will be the best to sow wherever the climate is not exceedingly dry. On the eastern border of the semi-arid district, or in certain mountain areas, where there is seepage from the foothills, winter wheat ought always to be grown. By far the best is Turkey wheat, and as far as our knowledge goes, it is the only winter wheat that should be employed. Winter wheat should be sown some time in October, the particular date depending upon the altitude. It should be put in always with a drill, and on ground that has been plowed early in the summer, preferably disked before plowing and afterwards surface cultivated two or three times before seeding. Where the rainfall is extremely slight, or at very high altitudes, only Durum wheat should be grown. In the far southwest even this wheat can be sown in the fall, if the seeding is done rather late, and will survive the winter. At very high altitudes, or as far north as Colorado, it is necessary for the present to use Durum in the spring. For spring seeding the ground should be fairly well prepared the preceding summer or fall, it should then be double disked very early in the spring, harrowed once, and then drilled. Sow the wheat just as early as the weather will allow.

In the inter-mountain areas it is probable that winter oats can be very well handled, but so far this is in such an experimental

How to make a Success of Dry Farming

stage that it would not be well for the farmer to go far into the matter until more is known about it. Of the spring oats, Texas Rust Proof, Early Burt and Sixty Day will be found the best. The standard variety for the southwest is Rust Proof, which will always be grown with more or less success, although it will not stand an extremely dry season. The Sixty Day and Early Burt are much alike and are very early in ripening. For this reason these will probably succeed better than the Rust Proof, simply because they may ripen before the most severe drought occurs. The ground for sowing spring oats should have the same preparation as for spring wheat. It is a good crop also to grow after a cultivated crop of the preceding summer. It will even do well after the sorghum crop, although the latter is very severe in exhausting the soil of its water. Wherever Indian corn can be grown, of course any of the small grains will do well following that crop. A fairly good rotation for many districts will be to follow small grain immediately with the sowing of some kind of pea crop, such as cow peas or the Canadian field pea, as the second crop for that season. Plow the pea ground in the fall, put it in corn, or one of the sorghums the next season, and in small grain again the third season. In this rotation, double disk the stubble ground immediately after taking off the crop, and about a week afterward plow the ground and at once sow the peas. The season will probably be too short to save any seed of the peas, but one can either have a sufficient stand to cut it for hay, or plow the crop under. Even the latter is quite a gain, and is well worth the cost of putting in the crop, simply because of the benefit to the land; but it would hardly be considered very profitable unless the farmer raised his own seed. None of these spring oats mentioned are especially drought resistant, but are likely to succeed, simply because of their early ripening, thus often escaping the worst period of drought.

There are no well established drought resisting barleys. Two or three kinds from North Africa are fairly good in this respect, but special advice from state experiment stations should be obtained first in regard to these. At high altitudes, and where the climate is cool rather than particularly dry, beardless barley is a good crop, but it is often simply cut green for hay. Hullless barley also does fairly well at high altitudes. Some difficulty will be experienced with these barleys, as because of their dwarf growth, it is often impractical to cut them with a self-binder. The treatment of the ground, manner of seeding, etc., would be the same in case of barleys as in seeding oats or spring wheat.

Some of the millets are found to be good crops on the high, dry plains. I would mention particularly the black and red seed Prosos, or Russian Millet, and the Siberian Millet. These are planted about the same time as one would plant corn or the sorghums, that is, about the middle of May in the Panhandle of Texas and Western New Mexico. These millets, as well as the small grain crops, should be seeded with a drill. All these kinds just mentioned are likely to be rather drought resistant, and the Prosos appear to be especially good for high altitudes, or in districts where the summers are fairly cool. Millets do very well on first breaking, particularly when the sod is sandy enough to be mellowed considerably with a harrow before sowing.

The ideal crops for the entire southwestern plains are the sorghums, either saccharine or non-saccharine. Any of them will do well, but for adaptation and sale of products I would recommend the white or red Kafir, Milo, Orange sorghum and Sumach or Red Top sorghum. Broom corn may also be mentioned, for it is really a sorghum, although it is never commonly thought of as belonging to that group. All of these crops are splendid for planting on first breaking, and in fact are suitable for almost any kind of severe conditions within the area to which they are adapted. It is already a common understanding among those farmers who have had experience in the southwest that wherever nothing else will grow sorghum or Mexican beans are the things to plant. These crops may be planted at different dates from about May 1 to July 15, but the mean or ideal time in the adjacent portions of Oklahoma, Colorado, New Mexico and the Panhandle of Texas is from May 1 to June 1. There are several ways of planting, but a good common method is to follow the breaking plow with the harrow two or three times, and then plant the seed with the ordinary corn planter. Where the soil is very sandy this treatment puts the sod in nearly as good condition as ordinary old ground. Even in heavy soils, however, the corn planter will work very well on the sod. To obtain seed, the Kafir should be the first thing planted, as it takes a longer period to mature the seed of this variety than of the other sorghums. The sweet sorghums can be planted as late as the middle of July, if intended simply for forage. In that case, it is well to use a ten-hole plate in the planter, and double row, that is, after going once over a certain portion, go over the ground again, straddling every second row. This puts the rows half as far apart as ordinary planting, and at the same time the seeding is generally fairly thick in each row.

Farming in the semi-arid plains is not child's play, and requires that the work be done in a very scientific manner, if one expects to have any success. It must be understood that the man who farms in that region as he would in Illinois will be sure to fail. There are two general principles to keep in mind, which, if thoroughly followed, ought to bring good results. First, use only the crops that are known to be drought resistant. Second, use every means for conserving the moisture in the ground. Whenever the crops can be cultivated by harrows, constantly work on all ground that can be harrowed immediately after rain. Begin the work of preparation of all suitable ground immediately after the crop is off, first by disking and then by plowing. Do all harrowing and cultivating of ground while it is in good fresh condition. Always follow the plow immediately with the harrow, or as soon as there is sufficient ground plowed to harrow. In the first breaking see that the sod lies down flat. It may be necessary to follow the breaking plow with the drag, and use the harrow immediately after the drag. At least once in two years all cultivated ground should have one rather deep plowing. Between times disking or shallow plowing may be sufficient, this depending upon the crop that is planted.

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THE OLD AND NEW HOMES In the Santa Fe Southwest—1895-1905.