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DEPARTMENT OF THE INTERIOR
ALBERT B. FALL, Secretary

UNITED STATES GEOLOGICAL SURVEY
GEORGE OTIS SMITH, Director

WATER-SUPPLY PAPER 490–D

ROUTES TO DESERT WATERING PLACES IN THE PAPAGO COUNTRY ARIZONA

BY

KIRK BRYAN

WASHINGTON
GOVERNMENT PRINTING OFFICE
1922

Monograph

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ROUTES TO DESERT WATERING PLACES IN CALIFORNIA AND ARIZONA.

PREFACE.

By O. E. Meinzer.

The desert region of the United States forms a great triangle whose base, 800 miles long, is the Mexican border from the Peninsular Mountains, in southern California, to the mouth of Pecos River, in Texas, and whose apex is in north-central Oregon. The west side of this huge desert triangle is the mountain wall formed by the Peninsular Mountains, the Sierra Nevada, and the Cascade Range; the east or northeast side is a less definite line extending from north-central Oregon, through Salt Lake City and Santa Fe, to the mouth of Pecos River. (See Pl. I.) It covers about 500,000 square miles, or very nearly one-sixth of the area of the United States.

This region is by no means devoid of natural resources or human activity. It contains prosperous cities, fertile agricultural districts, forest-clad mountains, a large aggregate number of watering places, many rich mines, and an unknown wealth of mineral deposits. But the localities that have water supplies are widely separated oases in a vast expanse of silent, changeless, unproductive desert whose most impressive feature is its great distances and whose chief evidences of human occupation are the long, long roads that lead from one watering place to another.

In the future existing oases will be enlarged, many new ones will be created, and the mineral and agricultural product of the region will be greatly increased. But in spite of all that man can do this large region will remain essentially a desert.

Travelers in this region must depend for their existence on the desert water holes (springs, wells, or natural tanks), many of which are separated from one another by a hard day's journey with team and wagon. For most of the region the water holes have never been accurately mapped or described, no systematic provision has been made for maintaining them, and the roads leading to them have not been marked with substantial and reliable signs. Hence, travel in the remote parts of the region has been a precarious and sometimes a dangerous undertaking.

The need of a systematic program for making the desert safe and accessible by mapping, marking, and improving its watering places has long been appreciated by public-spirited men who know its conditions. It has also been recognized that because of the great extent of the region and because most of it still belongs to the public domain the Federal Government can best do this work. For nearly 20 years Mr. George W. Parsons, of Los Angeles, has ardently advocated such a program.

Data on desert watering places were compiled some years ago by Gilbert E. Bailey, who was obliged to traverse repeatedly many of the main desert roads and trails, and these data were made available by him for use in a guide to watering places throughout a large desert area in California and Nevada published by the United States Geological Survey in 1909.[1]

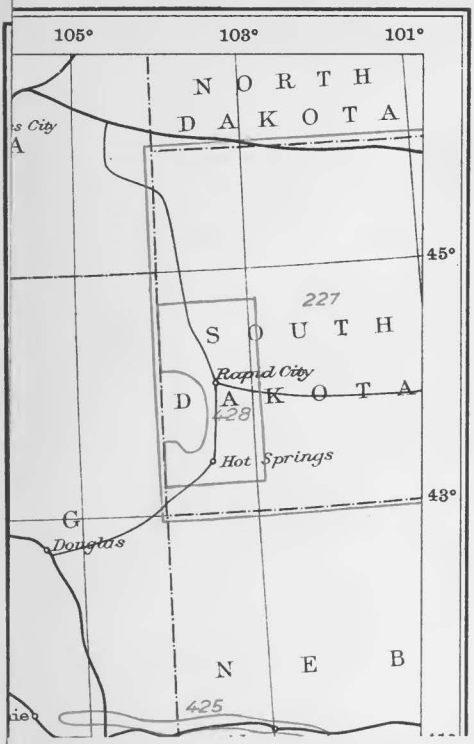
Considerable other work has been done by the United States Geological Survey in making maps of parts of the region and in publishing data on its water resources. (See Pl. I.) Signposts have been erected by States, counties, automobile associations, and other agencies, the Automobile Club of Southern California having been especially active in the southwestern part of the region. However, definite and precise information in regard to watering places, except those along the main roads, has not been available for most of the region, and most travelers in the desert have been obliged to grope their way through it by means of hearsay information.

A systematic program for the survey, marking, and protection of desert watering places was authorized by an act of Congress approved August 21, 1916, which reads as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Interior be, and he is hereby, authorized and empowered, in his discretion, in so far as the authorization made herein will permit, to discover, develop, protect, and render more accessible for the benefit of the general public springs, streams, and water holes on arid public lands of the United States; and in connection therewith to erect and maintain suitable and durable monuments and signboards at proper places and intervals along and near the accustomed lines of travel and over the general area of said desert lands, containing information and directions as to the location and nature of said springs, streams, and water holes, to the end that the same may be more readily traced and found by persons in search or need thereof; also to provide convenient and ready means, apparatus, and appliances by which water may be brought to the earth's surface at said water holes for the use of such persons; also to prepare and distribute suitable maps, reports, and general information relating to said springs, streams, and water holes and their specific location with reference to lines of travel.

An appropriation of $10,000 became available for this purpose July 1, 1917. With this appropriation, supplemented with some other

[1] Mendenhall, W. C., Some desert watering places in southeastern California and southwestern Nevada: U. S. Geol. Survey Water-Supply Paper 224, 1909.



EXPLANATION

Boundary of arid region requiring guides to watering places

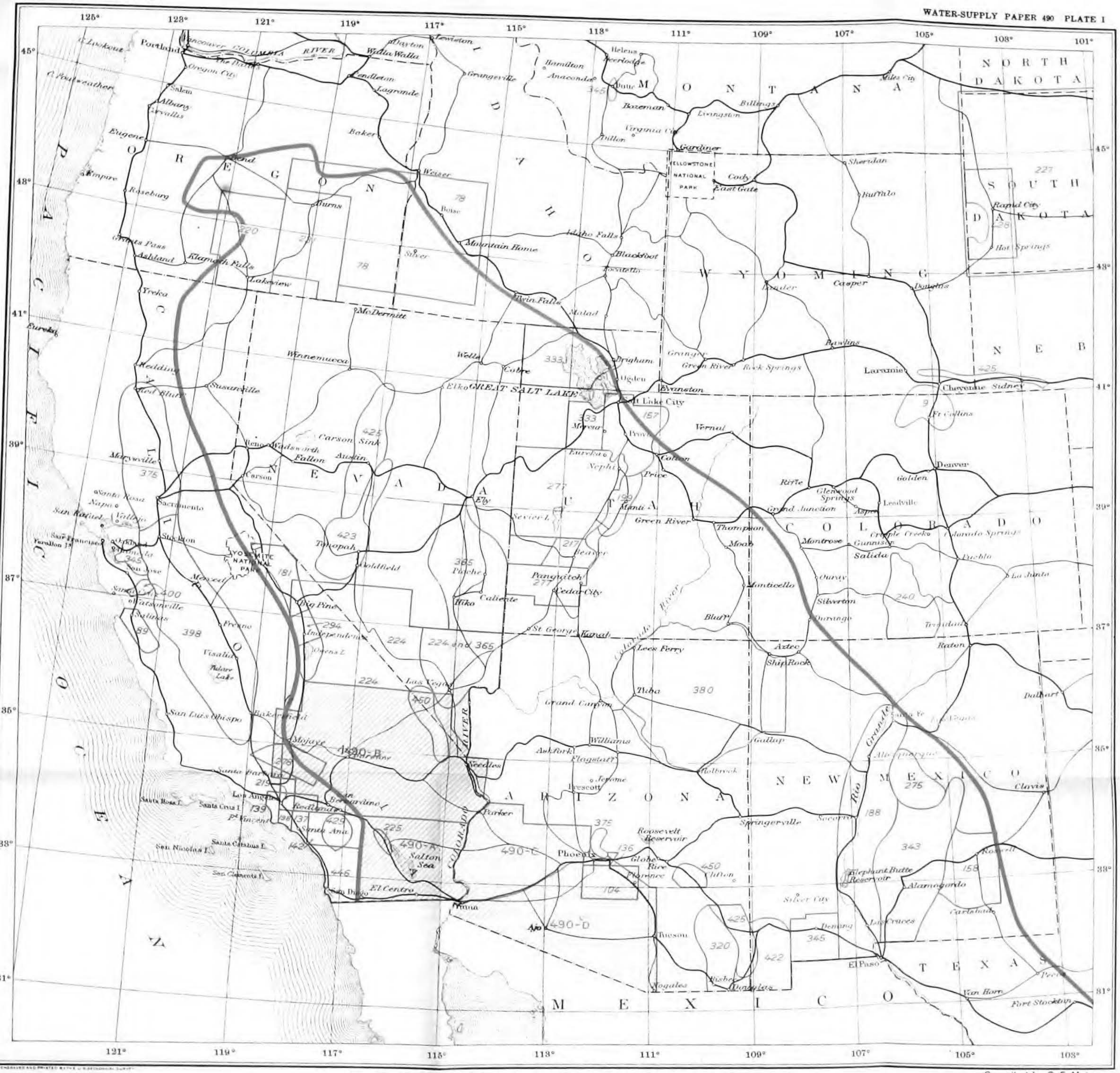
Area covered by guides to desert watering places.

Published as Water-Supply Paper 490 and in four separate reports, namely, 490-A, 490-B, 490-C, and 490-D

240

Area covered by water-supply paper

(*The number is the serial number of the paper. Only principal water-supply papers are shown. A complete list of publications relating to water resources*



Compiled by O. E. Meinzer

EXPLANATION

Boundary of arid region requiring guides to watering places

Area covered by guides to desert watering places. Published as Water-Supply Paper 490 and in four separate reports, namely, 490-A, 490-B, 490-C, and 490-D

Area covered by water-supply paper

(The number is the serial number of the paper. Only principal water-supply papers are shown. A complete list of publications relating to water resources and information as to areas covered by topographic maps can be obtained by writing to the U. S. Geological Survey, Washington, D. C.

Principal road

Other important road

MAP OF THE ARID REGION OF THE UNITED STATES

Showing areas covered by guides to watering places and other water-supply papers of the U. S. Geological Survey

Scale $\frac{1}{7,000,000}$

0 100 200 300 400 Miles

1920





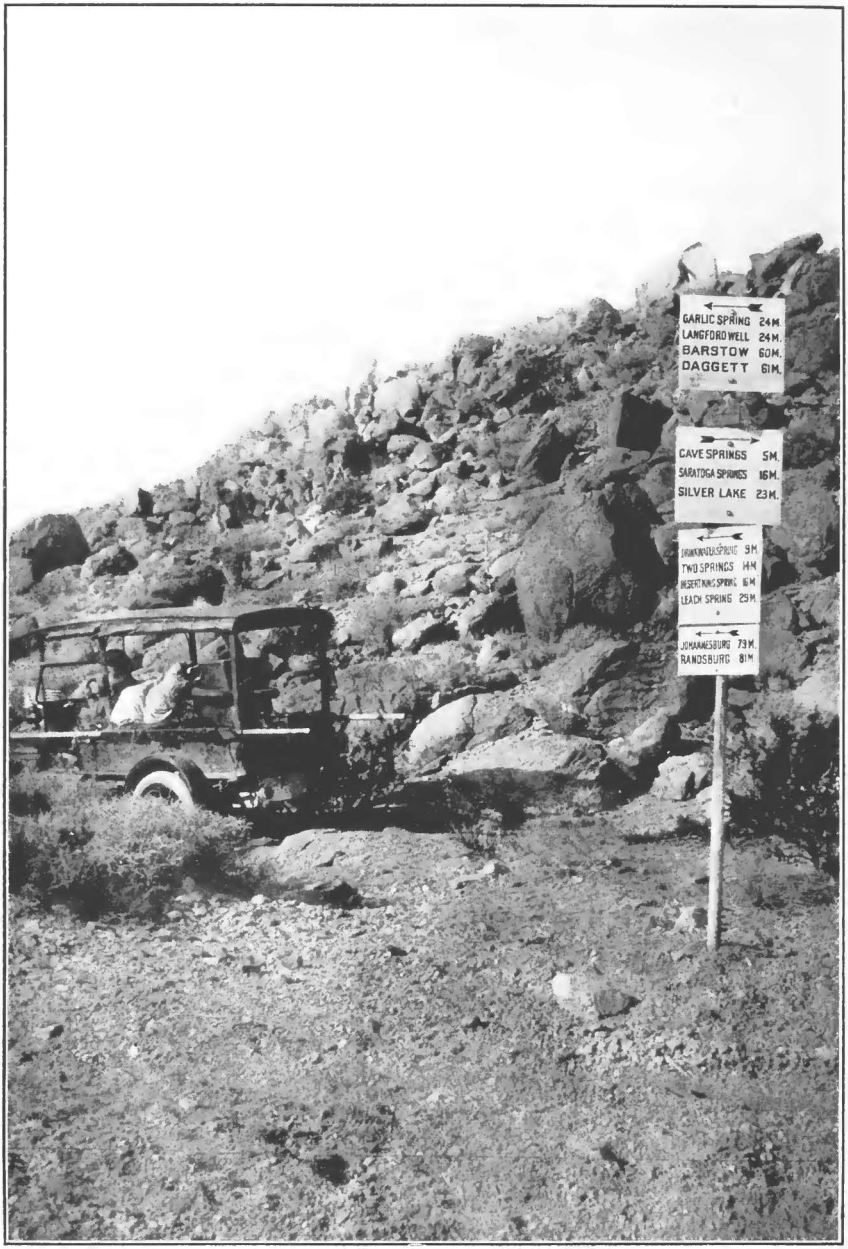
A. FIRST DESERT WATERING PLACE SIGNPOST ERECTED BY THE UNITED STATES GEOLOGICAL SURVEY.

Photograph by C. P. Ross.



B. BAD ROAD TRAVERSED IN DESERT WATERING PLACE SURVEY.

Photograph by C. P. Ross.



TYPICAL DESERT WATERING PLACE SIGNPOST ERECTED BY THE UNITED STATES GEOLOGICAL SURVEY.

Photograph by D. G. Thompson.

funds that could be used for the purpose, a survey was made in 1917 and 1918 of the driest, hottest, and least explored part of the desert region, comprising 60,000 square miles in southeastern California and southwestern Arizona. (See Pl. I.) It includes the southern part of Death Valley and the region between this valley and the Mexican border in California, and the region west of Tucson and Phoenix and south of Wickenburg and Parker in Arizona. The field work was done by four parties, each consisting of one geologist and one nontechnical assistant, and each provided with an automobile and light camping equipment. The mapping was done with the plane table, on a scale of 1:125,000. Most of the watering places in the region were examined; about 200 samples of water were collected and shipped to the water-resources laboratory of the United States Geological Survey for analysis; and a general exploration was made of the region to determine its geography and geology and its ground-water conditions.

Signs directing travelers to water were erected at 167 localities in California and 138 in Arizona. (See Pls. II, *A*, and III.) The signposts are galvanized iron, 1.9 inches in outside diameter and 12 feet long. Each post is anchored to the ground with two redwood blocks. The signs are 18-gage steel, enameled, are white, with dark-blue letters, and are substantially bolted to the posts. They are of two sizes, 18 by 20 inches and 9 by 20 inches. Most of the larger signs, 470 of which were erected, give the names, distances, and directions to four watering places; most of the smaller signs, 165 of which were erected, give the names, distances, and directions to two watering places. Through the courtesy of the Board of Supervisors of San Bernardino County, Calif., signs were placed on 26 iron posts previously erected by the county.

The area covered is the part of the desert region where such work was most needed, not only because, on the whole, it has remained the least explored, but also because it is the hottest and most arid area and the one having the worst roads. (See Pl. II, *B*.) The work was, however, undertaken as a part of a larger plan, which contemplates—to the extent that funds are available—a similar survey and erection of signposts for the entire arid region, as outlined on Plate I. To make the work permanently effective it will be necessary from time to time to revise the maps and guides and to repair and supplement the signposts. The Federal Government is also under obligation to maintain the desert watering places that have been withdrawn from entry and are held as public water reserves.

Soon after the field work was completed three of the four geologists who made the survey entered the Army and the other one was assigned to work on water supplies for military establishments.

Consequently the preparation of the maps and guides to desert watering places had to be postponed until after the war. Reports are now being prepared which will give detailed information about the watering places in the region and will contain more comprehensive and accurate descriptions of its geography, geology, and hydrology than have hitherto been published. The four abbreviated guides comprising the present series (Water-Supply Paper 490) are published in advance of the complete reports for the use of those who do not need the more general information which the complete reports contain. These abbreviated guides consist essentially of the maps, the road logs (which constitute concise guides to watering places), and very brief descriptions of the watering places.



ROAD ACROSS A SANDY WASH DUG OUT AND CORDUROYED WITH BRUSH.

ROUTES TO DESERT WATERING PLACES IN THE PAPAGO COUNTRY, ARIZONA.

By Kirk Bryan.

INTRODUCTION.

The Papago country derives its name from a group of semi-nomadic Indians belonging to the Piman stock, who were called by the early Spanish explorers the Pimos frijoleros, or bean-eating Pimas. Somewhat later the name Papago became generally current. These Indians ranged over the desert country west and south of Santa Cruz and Gila valleys and north of Altar Valley in Sonora as far west as the Gulf of California. The Spanish named the whole region inhabited by Indians of the Piman stock the Pimería and later distinguished the portion west of Santa Cruz River as the Papaguería.

The Papago country as considered in this report includes the part of the original Papaguería that lies north of the international boundary. (See fig. 7.) It is bounded by Santa Cruz, Gila, and Colorado rivers but includes also the routes from Tucson to Florence, Casa Grande to Florence, and Florence to Phoenix.

Except a few roads near the larger towns the routes of travel are not constructed highways but are only the tracks of previous travelers. Many routes are so little traveled that one may say of them, as the Mexican does: "No hay camino, pero es posible por un carro" (there is no road, but it is possible for a wagon).

For the convenience of the traveler as many as possible of the natural difficulties are recorded in the road logs, which were made with a speedometer attached to an automobile. It is impossible that any two logs made by different machines over the same route or even by the same machine over the same route will exactly correspond. Systematic errors, however, have been eliminated, and the logs have been checked against the maps.

The maps, published as Plates XXIII–XXV (in pocket), are the result of plane-table work done by me, combined with existing published and unpublished data. The most detailed recent work has been done by the United States Indian Service. The larger part of the detail of the Papago villages and roads in their vicinity has been compiled from this source. The topography and roads of the

Tumacacori Mountains have been redrawn from maps of the United States Forest Service. Much material was derived also from topo-

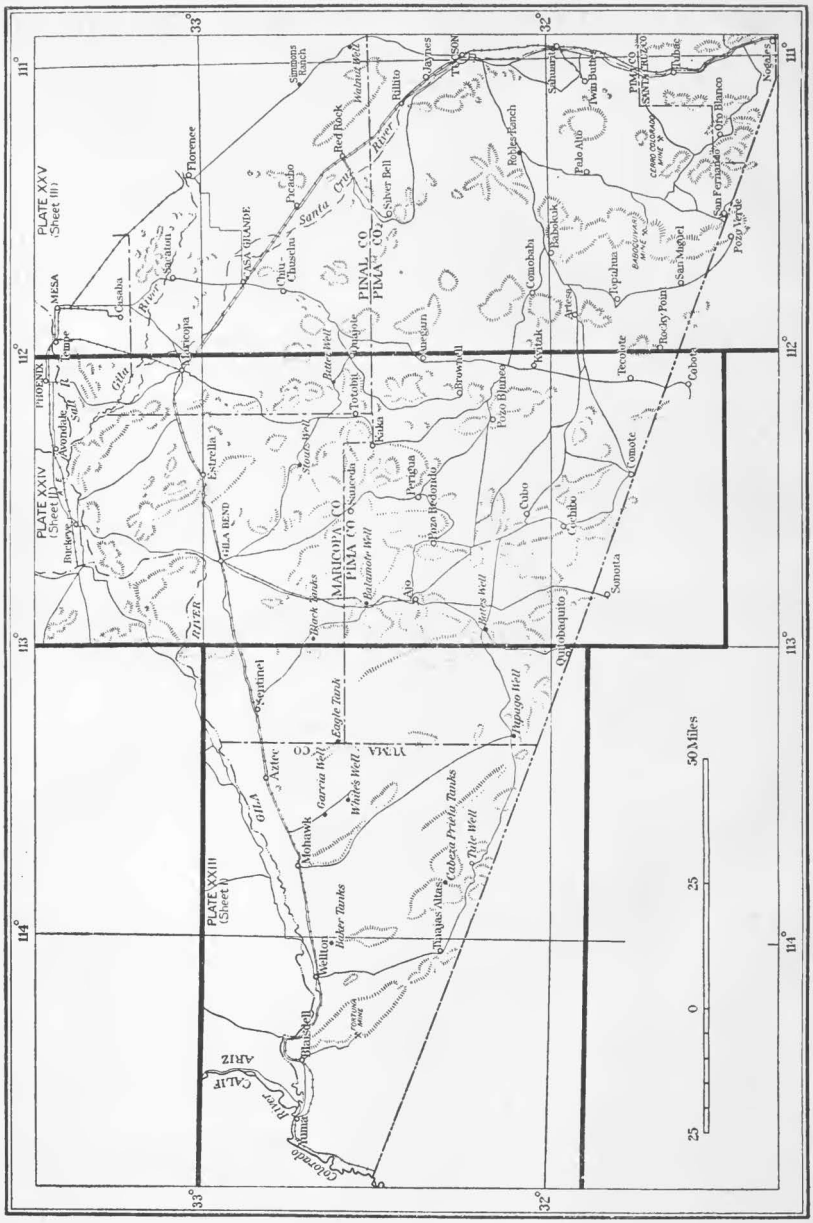


FIGURE 7.—Map of the Papago country, Ariz., showing principal roads and watering places and areas covered by Plates XXIII–XXV.

graphic sheets of the United States Geological Survey, plats of the General Land Office, railroad alinements, and maps of the Mexican Boundary Survey.

The topography has been drawn by J. H. Renshawe from the best available data. In the flatter areas the darkest color represents the lowest elevation and lighter colors the higher elevations. The mountains are shown by shading, as if seen under a strong light coming at a low angle from the northwest. The general form, size, and location of the mountains and the general relation of the roads, towns, and watering places to one another and to the topography are correctly shown, but minute exactness can not be expected in work of this type. Many locations are marked as approximate, and perhaps more should be so marked. Much detail is missing, particularly in the parts of the map that were made by compilation from maps made several years ago. It is thought, however, that all the features shown on the map will be found on the ground.

ACKNOWLEDGMENTS.

I am indebted to many people for kindness and for information of great value furnished during the progress of the field work. Clyde P. Ross, who was in charge of the work on desert watering places north of Gila River, cooperated heartily in contiguous territory, especially in making and compiling the map. He has furnished logs for about 60 miles of road, as is further noticed in the text. My field assistant, C. G. Puffer, made travel in the desert easy and contributed much local information. He is responsible for the mapping of the northern border of the Sauceda Mountains and for placing the signposts. I am particularly indebted for favors and information to Col. John C. Greenway and Messrs. August de Nave, W. B. Kibbey, Joseph Meneger, Thomas Childs, Manuel L. Corrillo, W. C. Gietz, Charles M. Hindman, C. R. Oldberg, W. D. Tremaine, and Samuel Clark.

WATERING PLACES.

The watering places of the Papago country differ widely in the quantity and character of water and in the facilities they afford travelers. Certain types of watering places are almost peculiar to the region; they are rare elsewhere.

The valley of Santa Cruz River and its tributary Nogales Wash from Nogales north to Tucson is an almost continuous watering place, containing many wells. During a large part of the year the bed of Santa Cruz River and the Gila Valley from Florence west to Gila Crossing and from Buckeye to Gila Bend carry water. In the irrigated area around Phoenix, which is supplied with water by the Roosevelt Dam, there are numerous canals, and at each farm house there is at least one well, so that a traveler may consider this area a continuous watering place.

In the area south of Gila River and west of Santa Cruz River the watering places are few and springs are very rare. Many of the settlements, especially those around mines, draw their supplies from wells, but the greatest number of wells have been put in as stock-watering places. In the Altar Valley and in the rolling country between the detached mountains east of it stock-watering places are so numerous that the traveler will have no difficulty in obtaining water. West of the Baboquivari Mountains watering places are scarce, and supplies other than wells become valuable.

Wells are generally of two kinds—shallow dug wells and deep drilled wells. The dug wells are commonly excavated in rock, although a few penetrate alluvium only. They are located in or along the border of the mountains. The yield of these wells is not great, and many holes have been dug without obtaining water. In general, if water is found it is ample for travelers. Travelers should, however, carry a bucket and 50 to 75 feet of rope, for many of these wells are not provided with any equipment. The sanitary character of the water is usually good, but wells that are unprotected and little used are sometimes contaminated by the bodies of rats and other small animals which fall in and drown. The traveler should be on the watch for such pollution. The Papagos draw water from wells in rawhide buckets. These buckets are made from fresh hides, and the hair rots off only with time. The fastidious traveler will boil water from Indian wells. Plate XXVI, *A*, shows a typical dug well used by the Papagos.

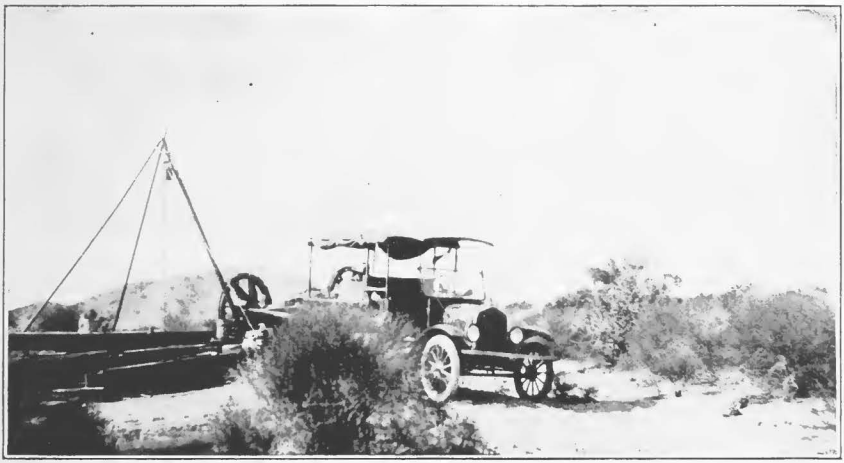
Deep drilled wells are usually located in the broad valleys. The greater number are stock-watering places of American cattlemen or wells maintained by the United States Indian Service for the Papago Indians. The water is excellent in quality and free from contamination when pumped. The traveler, however, will not always arrive at these wells when the pumper is present and will be compelled to use the water from the storage tank or reservoir. A casual inspection will show whether the reservoir is maintained in a sanitary condition. Great care should be taken to allow no water to waste and to close properly all gates which were closed and leave open all gates which were open on arrival. No man who is careless about gates can have friends in a cow country. The difficulties of obtaining water from an unequipped deep well are shown in Plate XXVI, *B*, and recounted on page 403.

Rock tanks, called in Spanish "tinajas," are natural cavities in the rocks which retain water for longer or shorter periods after rains. The traveler will find these useful watering places and will be especially dependent on them in the area west of Ajo (Pl. XXVII, *A*). The length of time in which water will be found at any tank depends



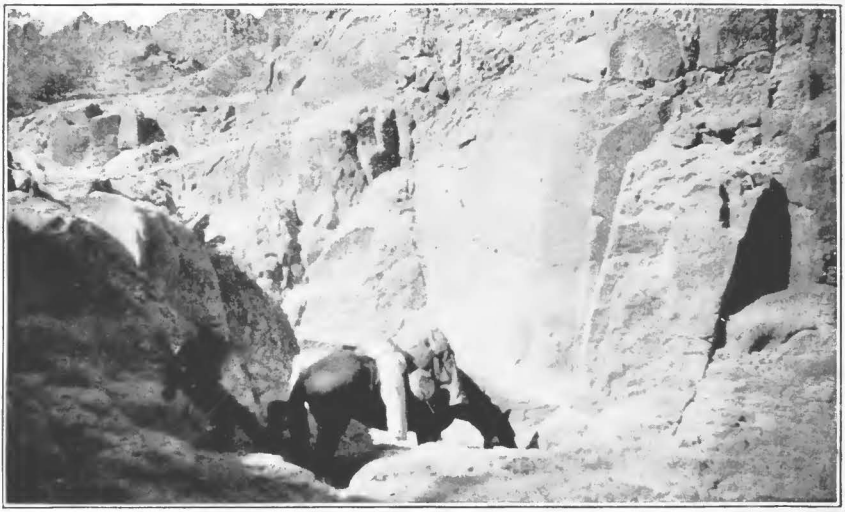
A. COCHIBO, ARIZ.

Shows typical head frame and trough of a Papago well.



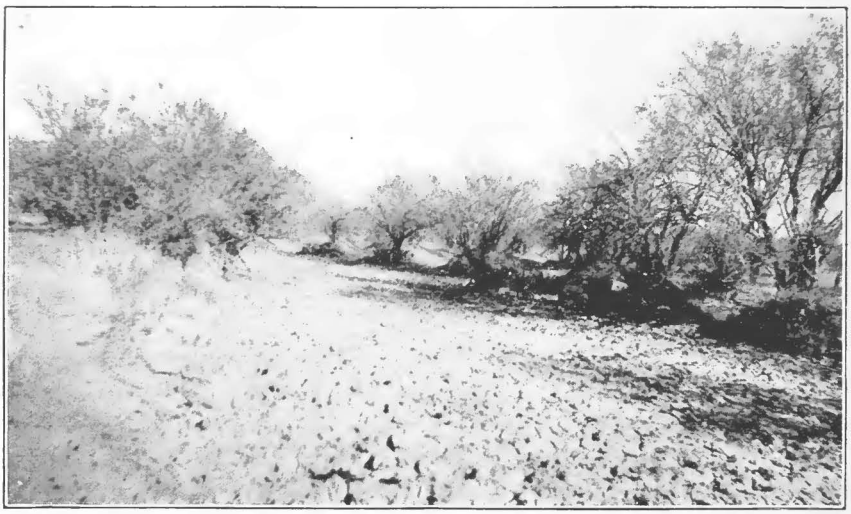
B. PAPAGO WELL, ARIZ.

Shows U. S. Geological Survey automobile hooked to the cable prepared to draw water from this deep well.



A. BLACK TANKS, ARIZ.

John Merrill's horse drinking the last water from the nearly dry main tank.



B. CHARCO NEAR POZO REDONDO, ARIZ.

The cattle-trampled water hole has been dry about a month.

on the season. Travelers should seek local information when they know that they are to be dependent on tanks. The water is sometimes foul from the growth of green algae or from the bodies of bees that fall in and drown. It is unlikely, however, that disease germs are present, for these tanks are seldom visited. The almost constant sunshine is also a great antiseptic agent. The so-called sand tanks are rock tanks that are filled with coarse sand in which the water is found by digging. They are less likely to be foul than rock tanks, and as the sand prevents evaporation the water commonly lasts longer.

Charcos are pools of water that occur along the channels where flood waters spread out over adobe flats. They range from a few inches to fully 5 feet in depth (see Pl. XXVII, *B*) and from about 5 to 30 feet in width, and some of them are more than 1,500 feet long. They hold water from a few days to several months after rains. During this time they are commonly used by wild animals and range stock. The traveler will usually find the water foul and muddy, but in many large areas it is the only water to be had, and if it is boiled before using it is a safe if not a palatable drink.

Represo is a general term for a small earthen dam that impounds flood water. American cattlemen include such dams under the generic term "tank." Represos are commonly built in adobe flats, and frequently only the borrow pit, from which earth was taken to make the dam, holds water. Even the larger ponds are only from 2 to 5 feet deep. In area they range from mere mud puddles to ponds 600 feet wide and 2,000 feet long. Aguirre Lake, near Buenos Aires, in the Altar Valley (Pl. XXV), which is 1½ miles long, is principally used as a reservoir for irrigation. The largest represo used by the Papagos, Artesa Pond, is shown in Plate XXVIII, *A*.

The water in some represos is as evanescent as that in the smaller charcos. The larger ponds hold water for several months after a flood. In many of the summer rancherías the pond is inclosed by a fence, and the Indian Service has built a watering trough so that cattle may be watered outside the fence. This refinement, however, is little used, and travelers will find the water foul and muddy from the trampling of animals. If properly boiled the water of the larger represos is a satisfactory and welcome supply.

In a few localities flood water is collected in old prospect holes. Within the hole, protected from sunlight, the organic matter in the water rots completely, leaving clear water with a faint brown tint. During the rotting process the water is unfit to drink, but after it has "sweetened" it is acceptable. The deliberate construction of such cisterns has not been undertaken, and those in existence are the result of accident. These structures are likely to increase in number in the driest parts of the region.

Along the Southern Pacific Railroad many section houses have no wells but are provided with cisterns, which are filled from tank cars. The water is good, and the cisterns are kept in excellent condition. As the supply is limited, however, great care is exercised in using the water. Travelers are allowed to obtain it, but this privilege should not be abused. It is to these cisterns that the logs refer when the statement is made: "Water at the section house in emergencies."

THE INDIANS IN RELATION TO TRAVEL IN THE PAPAGO COUNTRY.

The region between the Baboquivari Mountains and Gunsight Pass is inhabited by the Papagos and the nearly related Kohakt Pimas. The Indians number about 6,000. No Indians have more closely adapted their habits of life to the character of the region in which they live than the Papagos.

Physically the Papagos are a large, well-formed people, having a dark skin and bold if somewhat heavy features. Delayed maturity is common, and there is often a great contrast between the large and heavy middle-aged man and the slight and slender youth. The women are not uncommonly brighter and more vivacious than the men. Many of them are very handsome. Tuberculosis and trachoma are prevalent diseases. Travelers should use caution in and about Papago camps, particularly on account of trachoma.

The tribe is nominally Christian, and the greater number, having been converted under Mexican influence, are Catholic. Many, however, are Presbyterians, having been influenced toward that faith by their relatives, the Pimas of the Gila Valley. The original moral spirit of the race appears to have been high. They were brave in their almost constant wars with the Apaches, though peaceable in their relations with the whites, both Mexican and American. Nor have they sunk into that moral degradation which is all too common as a result of the contact of American civilization with primitive tribes. The Papagos present the unique example of a so-called inferior race profiting by the mistakes and failures of a superior race. However, much of their apparent success is due to their low standard of living, lack of pride, and somewhat hazy notion of property rights.

Before the coming of the white man the Papago had no beasts of burden or domestic animals. During the winter the people gathered around the permanent water holes and springs in the mountains, principally along the western foot of the Baboquivari Mountains and at Comobabi. With the coming of the summer rains they moved down into the valleys and planted crops of corn and beans in the broad flats that are liable to overflow. (See Pl. XXVIII, *B*.) These localities were usually at or near charcos--natural water holes that



A. ARTESA POND, ARIZ.

Papago cattle watering at one of the largest represos in the region.



B. PAPAGO FARMING

A flood-water field or temporal near Toapit.

filled with water during floods. (See Pl. XXVII, *B*.) As the crop was dependent on the floods also, there was always drinking water for planting and harvesting. During this period they gathered mesquite beans and the fruit of the sahuaro and pitahaya. Doubtless they hunted small game at all times, and certain members of the tribe were detailed to hunt deer, mountain sheep, and goats. The food not used immediately was carried back to permanent water holes in the mountains. This precarious method of farming and gathering of wild crops was not always successful, and if the season was a failure the following winter was one of starvation. Whole villages moved without hesitation toward better water supplies or to villages where the crop had been good. The rigors and hardships of this life can not be emphasized too much, especially as the Papago possessed no beasts of burden. The journeys from the winter home to the planting ground, distances of 10 to 30 miles, had to be made afoot, often with heavy burdens. Annually also a group made a trip to the Gulf of California for salt, which was an important article of aboriginal commerce.

Father Eusebio Kino, an Austrian Jesuit, began his missionary work with the Pimas and Papagos of Sonora in 1687 and first crossed into Arizona in 1691. Yearly and sometimes oftener until 1706 he journeyed through the country, preaching the gospel, introducing horses, cattle, chickens, wheat, oats, and barley, and encouraging house building. No resident missionaries, however, were located in Arizona until 1732, and these were confined to Santa Cruz Valley. Valuable as the introduction of domestic animals and the art of house building was to the Papagos, the gain was more than offset by the loss through Apache raids. The Apaches, supplied with horses, became the scourge of the country and so continued for many years. The Papaguería, once a safe refuge, was constantly menaced except during the period 1790 to 1820, when Spanish protection was adequate.

Upon the consummation of the Gadsden Purchase in 1857 the United States provided troops which, though not keeping the Apaches in check, protected the Papagos until the troops were removed in 1860 to engage in the Civil War. American settlers were few in the period from 1845 to 1860 and then were almost entirely driven from the country. The late sixties and seventies, however, saw a new influx of Americans.

The American settlers came to find mines or establish stock ranches. They immediately improved the springs or seeps used by the Indians and in many places dug new wells. Each white man's camp had its near-by Papago camp dependent on the new or improved water supply. The Indians worked for wages when work was to

be had—and the Papago is a good worker—or pilfered and begged when there was no work. As the prospects usually did not become mines, the white men moved away and the Indians inherited the watering places. Even successful mines like the Weldon, where at one time there was a town of 11,000 people, had a relatively short life. When the ore was exhausted the white men moved away. San Antone, a winter ranchería with a few Papago families, remains as the successor of Weldon. Covered Wells, Alamo, and several other villages are dependent on wells dug by white miners. The white stockmen were fewer in number than the miners, but they also generally failed and moved away, partly because of poor range and partly perhaps because of poor management. In addition they had to contend with the sullen opposition of Papago cattlemen and with the Papago belief that cows were made to eat. Pozo Redondo is a winter ranchería founded on the site of such an abandoned ranch and is dependent on the well dug by a member of the well-known Redondo family of Yuma. Kukomalik has a similar history. The Fresnal and Ventana ranches were supplied by bored wells whose machinery the Indians could not operate or replace, else doubtless the same thing would have happened when these ranches were abandoned. The Indian Service has now installed a pumping plant at the well on the Fresnal ranch, and under white supervision it can be maintained. A winter ranchería will probably spring up, and the history of Pozo Redondo will be repeated.

The Papagos are much as they were when first found by the Spanish, except that they wear white men's clothes and use wagons, horses, and many iron tools. They no longer hunt, for the big game is too scarce to make hunting profitable, but they do raise cattle. This industry promises to grow, but the people still mainly depend on flood-water farming. Around the fields or temporals are villages composed of more or less permanent houses called summer rancherías. From the Mexicans or Americans the Indians learned to build small dams with basins behind them to store flood water for drinking. These represos are to be found at almost every temporal. They supplement the charcos and enable the people to remain long enough to harvest the crop. The water is, however, usually muddy and often foul. As the summer rains begin the people migrate from the winter rancherías, near permanent water, to the temporals, and they return in the autumn. The Indian Service has drilled a number of deep wells at summer rancherías, and these new sources of water may eventually break up the system of migration.

This brief description of the life of the Papago Indians shows that they are great travelers. It is practically impossible to find a

place where diligent search will not reveal the former presence of the Papagos. Potsherds, broken stones, mortars, and remains of camps are common at every watering place. Formerly they went afoot, but now they go on horseback or by wagons. There are in consequence many roads, most of which follow the old foot trails and thus pass every available watering place, however infrequently it may hold water. Most of these watering places are small charcos. As many of these as were found are shown on the map, though many of them are of little value to the traveler.

The roads are a perfect maze in the vicinity of the villages or rancherías. From each of the scattered houses there is a road to every other house and to every near-by ranchería. Only at some distance from the village do these roads combine. At certain rancherías also cattle are watered either from wells or from ponds. The daily trampling of cattle often obliterates wagon tracks over the whole area of the village, and the stranger has much difficulty in getting out of a village and onto the right road. The road logs of these localities have been made as full as possible, but the traveler who has studied the map and knows the direction in which he is going may follow any track in that direction and be reasonably sure of coming into the right road.

Ordinarily the Indians drive around obstacles and do no work on roads. Some work is done, however, on the roads around their winter rancherías in the mountains. The other roads are simple wagon tracks or natural highways. A few Indians use broad-gage wagons, or the axle has been sprung so as to give the wagon an excessively broad gage. Unfortunate is the automobilist who follows a road made by such a wagon.

Roads are also readily abandoned or not traveled for months. Fields are frequently so badly washed by floods that they are abandoned, and the roads to them are no longer traveled. The inhabitants of villages who once were friendly cease visiting each other, and the road between shows no wagon tracks for years. The seasonal occupations of the people, however, produce the most common changes. For instance, the road from Pozo Redondo to Perigua has practically no traffic in the winter, but as the people of Pozo Redondo plant crops at Perigua, there is much traffic from the beginning of the summer rains until the end of the harvest.

To travelers the Papago is indifferent if not sullen. He makes no advances and receives those of others with assumed if not real dignity. He will not refuse help to those in real distress, however, but for his service he expects reward. From those whose difficulties are not serious or who appear to be able to pay he will exact a high price for his help. Travelers who speak Spanish fluently can com-

monly obtain more information and respect by using that language, but many Papagos have been to the Government schools and speak excellent English. These persons resent being addressed in poor Spanish. A Papago alone is more friendly and will give more information than when in a group.

TYPES OF ROADS.

Except in the vicinity of towns but little has been done to improve the roads of southern Arizona. They are usually only natural highways where first one and then another traveler has made his way across the country with good or ill fortune. Owing to the many open plains without natural obstacles, the dry climate, the consequent scanty vegetation, and the porous but compact soil portions of such unimproved or natural roads are very good. Stretches can be found where an automobile can make 40 miles an hour without trouble.

In the Gila and Santa Cruz valleys improved roads are being constructed near the larger towns by the counties and there are a number of through routes constructed or projected by the State. Much of this construction is excellent, good bridges, culverts, and concrete dips being provided, and in many places good road metal has been hauled in. As only one such road exists in the area south of the Gila Valley and west of the Santa Cruz Valley, travelers in this region must depend on the natural roads. The characteristics of these roads vary according to the type of country they traverse. They have been divided into four classes to which names have been given to facilitate road descriptions in the logs. These classes are called mountain roads, malpais roads, plains roads, and river-bottom roads.

MOUNTAIN ROADS.

The mountain roads run through mountains of various types and consequently have somewhat varying characteristics. Some work has been done on most of these roads to make them passable for automobiles or heavily loaded wagons. Upon the provisions of law much assessment work is done on the roads to mining claims, and travelers will find those to or adjacent to prospects in fair condition. Mountain roads are constructed on rock, residual soil, thin alluvium, or caliche. In consequence they are seldom muddy but frequently rough. The grades are usually steep, but long hills are rare. However, there are many very steep short grades in and out of gulches. The crossing of such little canyons with walls 10 to 25 feet high and sandy or gravelly bottoms presents the principal difficulty in traveling on roads of this type.

MALPAIS ROADS.

Roads passing over mesas capped by lava or "malpais" are in general comparatively good. Steep grades, bad washes, and heavy sand are rare. Depressions in the surface of the lava may become filled with sand, making rather heavy going. Such stretches are usually short and seldom present serious difficulties. The roadbed may, however, be rough and hard on tires. The principal difficulty is usually the ascent to the mesa, which, in addition to being steep, may be covered with drifted sand or loose boulders.

PLAINS ROADS.

By far the greater length of road and the greater number of roads lie in the alluvium-filled valleys or plains of the desert. The traveler comes to know these roads as the typical desert or plains roads. Generally alluvium makes good well-drained roads. Off the track of previous travelers, however, the ground is soft and the going heavy. Only lightly loaded automobiles and wagons can make progress. Cutting across the plains without a road should not be attempted with an automobile except by experienced travelers.

The plains road varies somewhat according to the part of the valley in which it lies. Near the mountains the alluvium is likely to be coarse and compact; the streamways are arroyos with banks 2 to 10 feet high floored with coarse deep sand. The road is then like a mountain road, rough but firm and difficult only at the streams. Midway of the alluvial slopes the alluvium is commonly softer and finer grained. It is easily washed during rains, and road ruts may be cut so deep as to leave high centers or be filled with soft sand that impedes travel. The streamways are washes, with banks 1 to 2 feet high and with bottoms filled with fine, often deep sand.

Near the centers and along the troughs of the valleys many of the roads run through adobe flats of fine-grained sandy clay, or through areas of low sand dunes. The adobe flats when dry make a good smooth roadway for light traffic but are easily cut up, so that the road becomes dusty and full of chuck holes. When wet they are seas of slimy and slippery mud into which vehicles sink from 2 inches to a foot. When the flat is dry these ruts, made in wet weather, are very hard on automobile tires. The sandy areas are seldom impassable, but progress is slow. The axial stream of a valley is generally a serious obstacle to travel. In some valleys it is merely an unusually large channel in an adobe flat. It is then easy enough in dry weather, but the steep clay banks when wet are often impassable for automobiles. In other valleys the axial stream is a broad arroyo with steep banks and sandy channel.

RIVER-BOTTOM ROADS.

Roads along the courses of rivers have generally been cleared of the mesquite, and a few culverts have been built. The roadbed is made of the fine-grained sandy clay and loam of the flood plains, and if well graded it makes an excellent road in dry weather provided there is little traffic. The material is so soft, however, that well-traveled roads in river bottoms soon become badly rutted, very dusty, and full of chuck holes in dry weather and so muddy in wet weather as to be almost impassable. These roads may also pass over the gravel benches along the river. Here the alluvium is coarser and more compact than it is in the flood plain, and the roads are similar in character to plains roads. They must, however, go in and out of the numerous tributaries, each with its dry and sandy channel. It is common to find two parallel roads along a river valley, one following the flood plain and the other the gravel benches. Which road is the better will depend on the season, the weather, and the amount and character of the traffic. Fortunately, newly constructed roads are replacing most of the valley roads.

GOOD, FAIR, AND BAD ROADS.

The use of the adjective "good" with regard to natural roads is, of course, subject to criticism, as perhaps none of them deserve it. However, a road that is called "good" in this region is one free from bad grades and mudholes and with no washes difficult to cross. On such a road an average speed of 12 to 20 miles an hour can be made without danger in an automobile. Heavy loaded wagons can make the journey with comparative ease.

On a "fair" road experienced drivers with good automobiles and all kinds of horse-drawn vehicles can get through, but travel is rough and only slow time can be made.

A "bad" road has heavy grades or washes that are difficult to cross, heavy wind-blown sand, or many adobe flats and washes, or a combination of these disadvantages. The natural conditions are such that only slow time can be made with any kind of vehicle. Automobiles are liable to get stuck in all kinds of weather and almost surely in wet weather.

In a number of places in the logs it is stated that a road is impassable for automobiles. By this is meant that such obstacles were seen or are known to exist that automobiles can not get through without building a new road. A road described as very difficult should not be attempted except with adequate preparations for emergencies and, if possible, with an experienced driver.

ROAD SIGNS.

The traveler will find many signs on all the well-traveled roads of Santa Cruz and Gila valleys, also in the area of the Salt River irrigation project. These signs have been put up by local advertisers, automobile clubs, and county authorities. In the desert the most reliable and permanent signs were put up in connection with this investigation. Their character is shown in Plate III. They will be found in 89 localities, shown on Plates XXIII–XXV by the symbol T.

In addition to the more substantial signboards, there are many small boards put up by prospectors and travelers. At road corners will be found also a wooden box, a tin can, a pile of stones, a rag tied to a tree, or some other crude mark. It is a point of desert etiquette not to disturb these marks.

ROAD DIFFICULTIES AND SUGGESTIONS FOR SURMOUNTING THEM.

On the comparatively short stretches of constructed road in southwestern Arizona travel involves only the hardships and problems usual in other parts of the United States. The roadbed may be rough and dusty but is always passable, and supply stations are found at frequent intervals. On the long routes over unimproved roads supply stations and even water are found only at infrequent intervals, and the roads are so poor that accidents and breakdowns are a commonplace occurrence. Unless the traveler is prepared for emergencies minor accidents are likely to have serious consequences. To go 12 hours without water is a hardship, and 24 hours is likely to prove fatal.

Automobile traffic is constantly increasing, and inexperienced persons confident in the perfection of their conveyances continually attempt to use the desert routes, usually with success. The traveler by wagon is commonly a habitué of the desert to whom advice is superfluous. The following remarks, in consequence, apply to automobile travel exclusively.

WATER.

Ample water should be carried. The amount should be great enough to fill the radiator at least once, in case of a leak. Human consumption of water is very great on account of the heat and the dryness. Two gallons per man per day is a minimum requirement. The Survey party of two men used in September for all purposes, including drinking, cooking, washing, and filling the radiator, from 9 to 13 gallons a day.

More than one receptacle should be provided so as to give a reserve in case of a leak or accident. Canvas water bags are very effec-

tive in keeping water at a pleasant temperature for drinking, but they are hard to carry afoot and they waste water. One or more metal canteens should be provided for use on side walking trips or if it is necessary to walk to get help.

GASOLINE AND SPARE PARTS.

Garages at which even simple repairs can be made or the commonest spare parts obtained are separated by great distances. The car should be in as good condition as possible before starting a journey, and enough tools and spare parts should be taken to make minor repairs on the road. Gasoline should be carried in at least one container in addition to the tank attached to the car. A leak in the gas line will not then exhaust the entire supply. Fewer miles per gallon can be expected on these roads than on boulevards, and the gasoline will not always be of the best quality. The Geological Survey car, a Ford touring-car chassis with light delivery-truck body, averaged about 6 miles to the gallon along the Camino del Diablo from Ajo to Yuma, whereas on good macadamized road 15 to 20 miles to the gallon was made. Sufficient oil should be carried to refill the crank case in the event of a leak.

EQUIPMENT.

Certain tools are necessary for every journey. A shovel and an ax, perhaps also a pick, should always be carried. Roads which were easy to travel yesterday may be almost impassable to-day because of a rain of which the traveler can have no warning. A rope and tackle or one of the patented devices of this nature is likely to be necessary to pull the car out of a hole or up a steep bank.

A rope, perhaps the same as that used with the tackle, and a bucket are very useful in obtaining water from wells, which may be stripped of such equipment by vandals. A good lantern in addition to flashlights should be provided for use in making repairs at night. A few feet of baling wire should be carried for miscellaneous repairs.

It is advisable to carry a little food, even if the traveler intends to reach an eating house or hotel each night. Breakdowns, however trifling, cause delay, which, if the traveler has no food with him, is a hardship. For the same reason on most routes bedding should also be provided. A breakdown at nightfall is then a mere incident requiring a camp overnight, whereas otherwise it means long and irritating work in the dark and an anxious night drive. Those travelers who carry light camping equipment and are not dependent on local accommodations will, on the whole, have the least trouble. At many places meals may be obtained, but beds must generally be provided by the traveler.

CHOICE AND EQUIPMENT OF AUTOMOBILE.

The Tucson-Phoenix and Tucson-Nogales highways have so much constructed roadway, and help and accommodations can be found at such short intervals, that an automobile of any type can make the trip. On the other roads the heavier and longer machines are at a disadvantage. A so-called light car with plenty of power is the best. Heavy tops are a disadvantage, and all equipment should be so chosen as to keep the weight as small as possible, balanced laterally, and confined between the front and rear wheels. Weight behind the rear wheels is a serious handicap.

CROSSING AN ARROYO OR WASH.

The ephemeral streams of the region have channels which are dry except for a few days a year. These channels are known as arroyos or washes. Wash or dry wash is the common local term. In the logs the term "arroyo" is used when there is a single definite channel with a sandy or gravelly bed and banks 2 to 10 feet high. "Wash" is used where the banks are low and there are numerous channels.

These streamways are the most common impediments to travel. During times of flood it is impractical to attempt to ford them, and travelers must wait until the flow ceases. Such delays are rare and usually short, even during the rainy seasons. An arroyo, even if it does not carry water, has difficulties of two kinds: (1) The banks are commonly steep, making an abrupt descent into and ascent out of the channel; (2) the bottom is covered with sand or gravel.

On well-traveled roads the banks have usually been worn or cut down so as to be passable. After a flood or on little-traveled roads it is a wise precaution to stop and look over an arroyo before attempting to cross. Time will often be saved by improving the road a little before starting, so that the car will not be stuck. Careful judgment in driving is nearly always required in order to go down the bank at a speed slow enough to avoid breaking a spring at the bottom and yet have momentum enough to cross the sand and make the ascent on the other side. A rather frequent difficulty with a Ford automobile in ascending the bank of an arroyo or other steep pitch is that the gasoline fails to feed from the tank to the carburetor. Banks steep enough to cause this trouble are usually short, and if the car is moving at a fair rate of speed, its momentum is often sufficient to carry it up. It frequently pays to back up the bank of the arroyo and try again. The double movement packs the sand so that sufficient speed can be maintained for the ascent, otherwise the car must be got to the top by the use of tackle or by shoveling down the bank.

Crossing the sandy or gravelly bottom is a problem in itself. The coarse gravels ordinarily give no trouble, but the finer the sand the more likely it is to be deep and soft. It is best to follow previous tracks with the highest speed consistent with the maximum power. If the car stops, back and try again, but do not under any circumstances allow the wheels to spin. Under the wheel tracks a layer of packed sand will be formed very much like a plow pan. This layer or wheel pan should not be disturbed. Usually the car does not break through it but is stopped by the friction of loose sand which falls in around the wheel. By repeated backing and going forward the pan is compacted and this loose sand thrown out of the way. If, however, no progress can be made, the loose sand should be shoveled away and a track made about 1 foot wide under the car for each pair of wheels and for about 10 feet in front of the car. In these tracks planks, canvas, or brush should be placed to give traction and then the car should be started. Planks are seldom available, and canvas wears out quickly from such treatment. Any available grass or brush will do, but the ubiquitous creosote bush, which has no other use, will be obtained most easily. The smaller bushy branches may be broken off with the hands in lengths of 1 to 2 feet and will be found to give sufficient traction when laid closely in the track. Plate XVI shows the appearance of a wash just west of Papago Well after the passage of the Survey automobile. When it was certain that the car was stuck, the tracks were shoveled out and then filled with creosote bush, as just described, but enough brush was not laid at first, so that sufficient momentum was not gained to get out of the sand. The operation was repeated, part of the brush being relaid, and the machine was successfully driven out of the wash.

CROSSING OTHER SANDY AREAS.

Areas of drifted sand present difficulties of the same sort as those encountered in the beds of arroyos and washes. The fine sand clings even more tightly to the wheels. It drifts into the wheel ruts within a few hours after the passage of a vehicle. On this account much traffic does not make the road better by permanently widening the wheel ruts, as it often does in washes.

The same kind of a wheel pan forms, however, and when the sand is 2 feet or more deep this wheel pan is the only salvation of the automobilist. To get out of the ruts is a calamity. When stuck the same methods can be used as for crossing washes. Where long stretches of sand are to be passed, a steady speed which will heat the engine the least should be maintained. The tires may be deflated to a pressure of 25 to 30 pounds per square inch, but while this device affords better traction it is hard on tires and should not be resorted to

except when absolutely necessary. If the engine becomes heated, the automobile should be stopped at a favorable place and thus prevented from getting stuck in an especially bad place. The driver should never fight the sand. Speeding the engine and spinning the wheels accomplish nothing.

ADOBE FLATS AND RIVER FLOOD PLAINS.

The ephemeral streams of the desert often have no definite channels but spread out in broad flats of sandy clay or adobe within which are only minor channels. Such flats are often covered with forests of mesquite and sometimes with "galleta" grass. The flood plains of the rivers are usually of similar though somewhat softer material.

In wet weather such places are likely to be "seas of mud," over which passage is difficult, if possible at all. Local advice should be sought and carefully considered before attempting to cross. Fortunate indeed is the traveler who can make camp and wait for the great adobe flats of the Quijotoa Valley to dry.

In dry weather, especially if there is much travel, roads across adobe flats and river flood plains have deep ruts and many chuck holes. They are rough and dusty but have no dangers if traveled slowly. Very deep ruts let the machine down so far that the axles, transmission, and other low-hung parts are liable to strike the center of the road. Such roads are said to have "high centers." Though most common in adobe flats, high centers are found wherever there is excessive wear on the wheel ruts or where rain water washes them. No danger is more easily avoided or will wreck a machine more quickly.

Usually in adobe flats there is a choice of tracks which, crossing and recrossing each other, all lead to the same place. If the surface is hard and the car lightly laden, it is often possible to strike off in a new track and thus avoid the chuck holes. This should be attempted with caution, however, as the surface may not be as hard as it looks.

MOUNTAIN AND HILL AREAS.

The difficulties of mountain areas are uncompromising. As a rule it is clearly either possible or impossible for a car to go to any given place. Around the borders or as basins within the mountains there are many areas of rocky, rolling country, where good roads are common. The interstream areas present no difficulties and can often be traveled without a road, although the wear on tires is excessive. The streams, however, lie in little rocky canyons with walls 10 to 30 feet high. They are often harder to cross than the arroyos of the valleys, and many are impassable.

Travel off the main roads in these areas is usually directed toward mines and prospects, and strangers will do well to consult local prospectors before attempting abandoned or little-traveled roads.

ROAD LOGS.

TUCSON-YUMA ROAD.

Travel from Tucson to California for many years has followed two main routes. The first route ran north to Gila River in the vicinity of the Pima villages, which lay along the river from Florence to Maricopa, and thence followed the river to the present site of Yuma. The other route ascended Santa Cruz River, crossed the present Mexican border to Saric or Caborca, and thence by way of Sonoita followed the Camino del Diablo across the desert into Yuma. The northern route was the easier in grades and in the presence of wood and water, but it was exposed to the raids of the Apaches. The southern route was dreaded because of recurrent disasters from lack of water.

At present the same distinction still holds in part, and travelers who desire comfort and safety will proceed from Tucson to Florence (pp. 361–365) and thence by way of Phoenix to Yuma, or in dry weather they may take the direct road from Tucson by way of Maricopa to Yuma (pp. 366–368).

The route to Yuma by way of Ajo, which is the modern representative of the old southern route, has been made possible by the increased number of watering places and is no longer dangerous in any sense. Travelers should, however, be prepared to camp and make road repairs. Two days' supply of water and sufficient gasoline for 150 miles of travel for automobiles are good insurance against trouble.

OLD MAIN ROUTE.

TUCSON TO YUMA (272.9 MILES).

[See pp. 340–344 for log in opposite direction.]

The part of this road from Tucson to Ajo consists of a number of alternative routes which are covered by the following logs. The first 45 miles out of Tucson is the same for all routes. Of this distance the first 36 miles is a well-graded macadamized road which was in excellent condition in 1921 and will undoubtedly be maintained in passable condition by Pima County. The last 25 miles has also been converted into a graded highway, of which the 15.5 miles from Gunsight ranch to Ajo is the same for all routes. By this new construction the distance from Gunsight ranch to Ajo has been reduced 1.3 miles. The log of the Pozo Blanco route has been adjusted for this difference, but travelers using the other logs should allow for it.

The old main route goes by way of Indian Oasis, Copeka, and Gunsight ranch to Ajo. The best present route is the Pozo Blanco route, which, branching off at the north end of Baboquivari Mountains, goes by way of Comobabi, Cobabi, Covered Wells, Pozo Blanco, and Gunsight ranch to Ajo. The old main route has three alternatives between Copeka and Gunsight ranch. The preferable road in ordinary weather is the Charco en Medio route by way of Pisinemo and Charco en Medio. This route is followed in the main log. The Cubo route branches from the Charco en Medio route at Pisinemo and goes to Gunsight ranch by way of Cubo, passing close to Walls Well. The Comovo route branches near Copeka and goes by way of Comovo and Cubo to Gunsight. It is likely to be the best route in wet weather.

0.0 **Tucson** post office. Go north one block, turn west on Congress Street, and proceed westward, passing station of El Paso & Southwestern Railroad on left.

0.4 Concrete bridge across Santa Cruz River.

0.6 Come into north-south road. Turn to left along base of Sentinel Hill. Right-hand road goes to Silver Bell.

3.8 Crossroads. Take road on west, which is a new macadam road leading through Robles Pass, for 22 miles into the desert. Road south goes to **San Xavier Mission** (see p. 353); road east goes to Indian school and connects with valley roads.

5.6 Quarry on left.

7.8 Fork. Road on left goes to Mile Wide Copper Co.

10.6 Snyders Hill, with quarry on left.

13.9 Well on left.

21.6 Well on right. These wells were drilled for supplying water for road building; not certain whether they will be maintained as watering places.

23.3 **Robles ranch. Well and good water.**

23.4 Fork. County signpost. Keep to right. Road on left leads to Sasabe, La Osa, and Arivaca. (See p. 355.)

25.0 Steel bridge over large arroyo.

31.1 Reverse fork. Road on left comes in from Indian field.

34.0 Crossroads. Keep straight ahead. Road on left comes in from **Alamo,** winter ranchería, and **well. Water half a mile south on this road.** Road on right leads to **San Pedro,** winter ranchería, and **well** (4 miles).

34.2 Reverse fork. Second road from **Alamo.**

36.0 **Roadside mine.** Miners' shacks and new shaft on left. **Water** and limited amount of supplies can be obtained here **when mine is being operated.** Graded highway extended a short distance beyond this point in 1920.

36.3 **Dobbs Well** on left. **Water can be obtained with rope 55 feet long and bucket.**

39.4 Fork. County sign. Keep to right. Left-hand road to **Coyote,** winter ranchería and **well. Water half a mile by this road.**

40.1 Cross faint **road.**

40.2 Reverse fork. County sign. Road from **Coyote** comes in on left.

41.0 Reverse fork. Faint road comes in on left.

43.6 Crossroads. Road on **left** from Coronel; road on **right to Santa Rosa ranch.**

44.0 **San Vicente. Well, good water.** Small store but **no** gasoline and limited amount of supplies.

45.1 Fork. Geological Survey sign. Take left-hand road through gate; right-hand road is Pozo Blanco route, best route in 1920. (See p. 345.)

46.7 Road forks. County sign. Take right-hand road here. Left-hand road leads to **Babokuk,** winter ranchería, and **well. Water 2 miles south on this road.**

47.2 Crossroad leading from **Babokuk** to temporales.

47.7 Reverse fork. Road from **Babokuk** comes in on left.

50.1 Reverse fork. Faint road comes in on right.

52.6 **Fresnal ranch.** Well on right. County sign on left. **Well** now used by U. S. Indian Service, and **water can probably be obtained at all seasons.**

54.0 Fork. Keep to left uphill to Papago hut at mile 54.3. Faint road on right along fence leads through fields to Jeowic, summer ranchería.

55.1 Road fork; county sign. Keep to right; left-hand road goes to Magdalena, Tucsoncito, and Topahua.

55.9 Reverse fork. Faint road comes in on right.

56.7 Cross faint road from Tusconcito to Jeowic.

59.0 Reverse fork. County sign on left. Road from Tucsoncito comes in on left.

59.4 Fork. Road on right goes to **Artesa Pond,** a quarter of a mile, **no drinking water.** (See Pl. XXVIII, *A.*)

59.5 Reverse fork. County sign on left; road from Topahua comes in on left; go up rocky hill.

60.9 **Artesa,** winter ranchería, **well on right; better water half a mile farther at Indian Oasis.**

61.3 Government school on left.

61.4 **Indian Oasis,** Sells post office. **United States Indian Service well on right;** Presbyterian Mission on left; meals can usually be obtained there; store on hill directly ahead, 0.4 mile by road; post office, supplies, and gasoline; good water can be obtained from Government Well, Presbyterian Mission Well, or Menegers Well. North and south routes to Big Fields begin at this point. Northern route is half a mile longer but often better. (See p. 344 for log.) Consult storekeeper as to which road is in better condition. Following southern route, keep to left past Geological Survey sign (mile 61.6) between hill and fence. **No permanent water until Gunsight ranch is reached (58 miles).**

61.7 House on left.

62.1 Well on left; no water obtainable.

62.9 Double-road fork. Geological Survey sign. Take right (west) fork, following south side of fence to mile 63.2. Left fork goes to **James Well;** middle fork to Tecolote and Mexico.

63.2 Pass north and to right of fence corner.

71.0 Small earth dam (represo) on left, then corral.

71.3 County sign; bear to right with houses and fields on right.

71.4 County sign; continue westward on south side of fences.

73.9 Reverse fork; Geological Survey sign at Big Fields, summer ranchería. Alternate road from **Indian Oasis** comes in on right. (See p. 345.) Proceed westward.

80.7 Copeka. Summer ranchería. Road usually obliterated by trampling of cattle; pass between corral and hill. **Water in the pond several months of the year; it should be boiled before drinking.** Road leads south from this point to Tonukvo (2.6 miles). By crossing main drain of the valley just north of the pond and going westward toward the hills an old road will be found leading to Serventi Well and Menegers Dam. (See p. 395.) Road to Ajo, turn to right (north) at corral.

80.9 Houses on right.

81.4 Cross small levee.

82.9 Road fork. Geological Survey sign. Keep to right. Road on left is Comovo route. (See p. 349.)

83.3 Faint road on right.

84.4 Road forks on left to house; keep to left.

84.9 Represo on left.

85.3 House on left; field on right.

85.8 Field on right; then numerous crossroads and forks to Black Butte.

89.6 Geological Survey sign. Follow around brush fence. Road comes in on left (southwest) from oCmovo. (See p. 350.) Road goes northeastward on south side of temporal to **Black Butte** (8 miles).

89.8 Houses on right.

90.0 Hardimui. Summer ranchería. Geological Survey sign. **No permanent water.** Houses and represo on right. Bear to left; corral on right (east); houses on left.

90.4 Corral on left.

90.6 Small represo.

93.0 Cross wash and follow left (west) of large represo into Pisinemo.

93.2 Pisinemo. Summer ranchería. Small represo on right; about 12 houses including small church and house with tin roof on left. **No permanent water.** Follow along south side of brush fence to corner. Road to Comovo goes southwest toward two small hills on plain on left side of house with tin roof (5.7 miles). Road to Pozo Blanco goes northeast by small represo (11.1 miles). Road to Black Butte goes east between the two represos (8.2 miles).

93.6 Road fork at southwest corner of brush fence. Geological Survey sign. Keep to right along fence; road on left is Cubo route. (See p. 348.)

93.8 End of fence.

95.3 Faint road on right.

96.8 Small charco on right.

101.8 Three small black hills a quarter of a mile north of road.

109.1 Cross difficult wash into gap between low hills.

109.6 Small charco on left (south).

110.1 Small charco on right (north).

110.7 Charco en Medio. Summer ranchería. **Represo on left, usually dry;** houses on hill to left. Continue northwestward on main traveled road. Road to Cubo goes to left (south) on west of represo. Road to Charco de la Piedra, very faint, on right, west of houses.

111.8 Charco on left.

113.2 Reverse fork. Road comes in on left.

113.7 Fork. Keep to right. Alternate road on left; no advantages.

114.0 Reverse fork. Geological Survey sign. Come into east-west road. This is the Pozo Blanco route, now an improved highway. (See p. 345.) Turn to left (west).

116.1 Reverse fork. Alternate road from Charco en Medio comes in on left.

116.7 Cross wash.

118.7 Cross faint road.

118.8 Cross wash.

118.9 Reverse fork. Geological Survey sign. Come into well-traveled road. This is Cubo route. (See p. 348.)

119.3 Turn to right (northwest). Road from Gunsight mine, 1 mile distant, comes in here.

119.4 **Gunsight ranch,** also called Blair's ranch; Geological Survey sign. **Good water in well** on right of road. Continue through gate. Road to **Pozo Redondo,** Charco de la Piedra, and Perigua turns off on right up wash.

119.8 Come into highway. (See p. 345.) A faint road comes in on left from Gunsight mine. Left-hand road goes to **Jaques ranch** (0.7 mile), where **water can usually be obtained,** and to **Lewis Well** (3.1 miles), which has **good water.** This detour returns to main road in 6.4 miles. Smokestack of New Cornelia Copper Co.'s plant at Ajo visible to the northwest.

124.7 Fork. Keep to left. Right-hand road to **Childs ranch.**

126.5 Reverse fork. Geological Survey sign. Road from Jaques ranch and Lewis Well comes in on left.

129.5 Fork. Keep straight on. Right-hand road leads to **Childs ranch.**

130.4 Faint road comes in on left.

131.5 Reverse fork. Old road comes in on left.

132.8 Fork on left to **Darby Well** (1.5 miles); then fork on right to **Childs ranch** (3 miles); turn downhill (north) and cross wash.

133.0 Road to Levy's ranch goes off on left; **no well, but water can be obtained in emergencies.**

133.9 Reverse fork. Well-traveled road comes in on right from **Childs ranch** (2.7 miles). Turn to left (west).

134.2 Reverse fork. Road from **Darby Well** comes in on left.

135.3 **Clarkstown** (Rowood post office); **water supply,** groceries, supplies, repairs, gasoline. Continue west on main street and turn to right (northwest) along fence of New Cornelia Copper Co.'s mill.

135.9 Reverse fork. Geological Survey sign. Turn to left across tracks and then to right into town. Road from Yuma and Gila Bend comes in on right.

136.2 **Ajo** railroad station. **Excellent water supply;** hotels, stores, automobile supplies, repairs, gasoline, etc. From Ajo roads lead south to Sonoita, Sonora (see p. 410), west by the Camino del Diablo to Yuma (see p. 402), and north to Gila Bend and Phoenix (see p. 391). Best route to Yuma is by way of Sentinel; return to railroad crossing and Geological Survey sign, same as mile 135.9.

136.5 Geological Survey sign; bear north toward frame shacks.

137.3 Fork. Old road goes off on right.

137.7 Fork. Geological Survey sign. Take left-hand road; right-hand road leads to **No. 1 well.**

138.3 Cross railroad.

139.1 Reverse fork. Road from Gibson, a suburb of Ajo, comes in on left.

144.0 Cross railroad.

144.9 **Batamote Well.** Geological Survey sign. **Good water in dug wells on right; next water 34 miles away.**

145.4 Cross railroad. Fork. Geological Survey sign. Turn to left (southwest) parallel to railroad; right-hand road goes to **Gila Bend** (see p. 391); center faint road is abandoned.

145.6 Turn to right (west).

148.5 No. 3 well. Road usually obliterated by cattle tracks. Turn fence corner by well and drive north between corral and house. Deep drilled well; pumping plant abandoned in 1921, and water unobtainable by travelers.

150.1 Cross bad wash.

150.3 Abandoned road comes in on right; enter gap in hills.

151.0 Drift fence; close gate.

152.4 Drift fence; close gate.

152.9 Cross deep wash and rocky hill; follow along border of Crater Mountains, keeping the hills on the left.

157.4 Turn to left (northwest) around rocky point into gap.

158.2 Reverse fork. Geological Survey sign. Continue northwest through gap in hills. Road and trail lead from **Black Tanks** (1.7 miles); **uncertain water.** (See Pl. XXVII, *A*.)

162.7 End of gap. Turn slightly right (north).

163.2 Begin to run on lava of Sentinel basalt plain.

179.4 Brown's Hotel and store at **Sentinel**; water, rooms, meals, supplies, gasoline. Pass in front of hotel and proceed west.

179.9 Cross railroad; road fork. Geological Survey sign. Turn to left along railroad track; center road leads to Agua Caliente; right-hand road goes east to Sentinel station and thence along railroad to Gila Bend. (See p. 385.)

186.6 **Stanwix. Water in emergencies at section house.**

188.4 Go downhil off Sentinel basalt plain.

194.4 **Aztec. Water from railroad well.** Geological Survey sign. Continue west on north side of track; considerable drifted sand. Road to **Palomas** (7 miles) on right (north); road to Eagle Tanks crosses track and goes southwest.

206.4 **Stoval. Water in emergencies at section house.** Continue west along track; much drifted sand. Road to **Garcia Well** and **Whites Well** crosses railroad and goes south. (See p. 415.)

211.5 Fork. Continue west along track. Road to left crosses railroad and goes south to Red Cross mine (5 miles).

213.0 Turn to left under bridge to south side of track.

213.3 Turn to right under bridge to north side of track.

213.9 **Mohawk. Water,** limited amount of supplies, gasoline. Continue west through heavy drifted sand. Road leads north from Mohawk to Norton (7 miles). Difficult and waterless road leads south 52.5 miles to **Papago Well.**

217.5 **Pembroke. Water in emergencies at section house;** heavy sand to Colfred.

222.5 Colfred. Railroad siding.

231.4 Red hill on right of road.

235.7 **Wellton,** post office. **Water,** hotel, garage, supplies, gasoline. Camino del Diablo comes in on south. (See p. 402.) The main Phoenix-Yuma road[1] comes in on the east, and the two routes are the same from Wellton to Yuma. Go west between post office and hotel.

238.4 Turn to left (south).

238.9 Turn to right (west).

239.4 **House** with windmill on right; **good water.**

240.9 **Reynolds well; good water** on left.

243.0 Macadam road begins.

252.9 **Dome.** Post office, **water,** hotel, gasoline. Continue northwestward on macadam road. From Dome a road leads across the river to Castle Dome and other points in Yuma County.[2]

259.6 Blaisdell. End of macadam; **water at Imperials Well, 0.7 mile northwest** by sandy road. Road to **Fortuna mine** crosses railroad through gate and goes south. (See p. 416.) Turn west and follow best of many rutty tracks over soft ground in the flood plain of Gila River.

266.9 **Windmill on left; water.**

271.9 Cross railroad track and follow it into Main Street of Yuma to railroad station.

272.9 **Yuma.** Post office, **water supply,** hotels, repairs, gasoline, and supplies. From this town a bridge across Colorado River connects with roads to Los Angeles and San Diego.[3]

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[1] Ross, C. P., Routes to desert watering places in the lower Gila region, Ariz.: U. S. Geol. Survey Water-Supply Paper 490, pp. 271–315, 1922 (Water-Supply Paper 490–C).

[2] Ross, C. P., op. cit.

[3] Brown, J. S., Routes to desert watering places in the Salton Sea region, Calif.: U. S. Geol. Survey Water-Supply Paper 490, pp. 1–86, 1920 (Water-Supply Paper 490–A).

YUMA TO TUCSON (272.9 MILES).

[See pp. 334–339 for log in opposite direction.]

0.0 **Yuma.** Post office, hotels, supplies, gasoline, and repairs. Go south.
1.0 Cross railroad track to southern outskirts of town; turn to left (east).
6.0 **Windmill** on right; **water.** Follow best of many rutty tracks.
13.3 Blaisdell. Turn north on good macadam road. **Water at Imperials Well,** 0.7 mile northwest. Road to **Fortuna mine** goes through gate, crosses railroad, and goes south. (See p. 416.)
20.0 **Dome.** Post office, water, hotel, supplies, gasoline. Continue southward on macadam road. From Dome a road leads across the river to Castle Dome and other points in Yuma County.[4]
29.9 End of macadam road. Go eastward by best track over soft valley road.
32.0 **Reynolds Well. Good water** on right.
33.7 **House with windmill** on left; **good water.**
34.0 Turn to left (north).
34.5 Turn to right (east).
37.2 **Wellton.** Post office, **water,** hotel, garage, supplies, gasoline. Camino del Diablo comes in on south. (See p. 406.) The main Phoenix-Yuma road[4] branches off at this point. Continue east, keeping railroad on right.
41.5 Red hill on left of road.
50.4 Colfred. Railroad siding; heavy sand to Pembroke.
55.4 Pembroke. **Water in emergencies** at section house; heavy sand to Mohawk.
59.0 **Mohawk. Water;** limited amount of supplies, gasoline. Continue east through gap. Road leads north from Mohawk to Norton. Difficult and waterless road leads south 52.5 miles to **Papago Well.**
59.6 Turn to right under bridge to south side of track.
59.9 Turn to left under bridge to north side of track.
61.4 Fork. Continue east along track. Road on right crosses railroad and goes south to Red Cross mine (5 miles).
66.5 **Stoval. Water in emergencies** at section house. Continue east along track; much drifted sand. Road to **Garcia Well** and **Whites Well** crosses railroad and goes south. (See p. 415.)
78.5 **Aztec. Water from railroad well.** Geological Survey sign. Continue east along track. Road to **Palomas** (7 miles) comes in on left (north). Road to **Eagle Tanks** crosses track and goes southwest.
84.5 Go uphill to Sentinel basalt plain.
86.3 **Stanwix. Water in emergencies** at section house.
93.0 Fork. Geological Survey sign. Cross railroad and turn to left to Brown's Hotel (mile 93.5). Road on left leads from **Agua Caliente;** road straight ahead along track goes to Sentinel station and thence along railroad to Gila Bend. (See p. 385.)
93.5 **Sentinel.** Brown's Hotel and store; water, rooms, meals, supplies, gasoline. Pass in front of hotel and turn to right (southwest) across lava of Sentinel Plain.
109.7 Run off lava of Sentinel Plain across flat valley to gap in Crater Mountains.
110.2 Turn into gap.
114.7 Fork. Keep to left. Road and trail on right go to **Black Tanks** (1.7 miles); **uncertain water.**

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[4] Ross, C. P., op. cit.

115.5 Turn to right (southeast) and follow along border of Crater Mountains, keeping hills on right.
120.0 Cross rock hill and deep wash into gap in hills.
120.5 Drift fence; close gate.
121.9 Drift fence; close gate.
122.6 Enter open valley; abandoned road forks to left; head toward well tower in middle of valley.
122.8 Cross bad wash.
124.4 No. 3 well; deep well; pumping plant abandoned in 1921, and water unobtainable by travelers. Road usually obliterated by cattle tracks; turn to left at well and go southeastward up valley toward Batamote Mountains.
127.3 Turn to left along railroad track.
127.5 Reverse fork. Geological Survey sign. Turn to right and cross railroad track. Two roads come in at this fork, a faint abandoned road and the road from Gila Bend to Ajo (see p. 389), which is followed from this point into Ajo.
128.0 **Batamote Well.** Geological Survey sign. **Good water** in dug wells. Keep to right of wells.
128.9 Cross railroad.
133.8 Fork. Take left-hand road; road to right goes to Gibson, a suburb of Ajo, and is very difficult for automobiles.
134.6 Cross railroad.
135.2 Reverse fork. Geological Survey sign. Road from **No. 1 well** comes in on left.
135.6 Reverse fork. Old road comes in on left.
136.4 Reverse fork. Geological Survey sign. Cross railroad and turn to right in the town to Ajo railroad station (mile 136.6). Road comes in on left from Clarkstown and Tucson.
136.6 **Ajo.** Excellent **water supply,** hotels, stores, automobile supplies, gasoline, and repairs. From Ajo roads lead south to Sonoita, Sonora (see p. 410), west by Camino del Diablo to Yuma (see p. 402), and north to Gila Bend and Phoenix (see p. 391). Return to Geological Survey sign same as at mile 136.4.
136.9 Geological Survey sign. Turn to right, keeping mill of New Cornelia Copper Co. on right.
137.6 **Clarkstown** (Rowood post office); **water supply, repairs,** gasoline, and supplies. Continue east on Main Street.
138.7 Fork. Keep to left on improved highway. Road to right goes to **Darby Well.**
139.0 Fork. Turn to right. Road on left goes to **Childs ranch** (2.7 miles).
139.9 Road to **Levy's ranch** goes off on right; **no well,** but water can be obtained in emergencies. Go uphill.
140.1 Fork on left to **Childs Well** (3 miles); then fork on right to **Darby Well** (1.5 miles). Go southeast toward Gunsight Pass.
141.4 Fork. Old road goes off on right.
142.5 Fork. Faint road goes off on right.
143.4 Reverse fork. Keep straight on; left-hand road comes from **Childs ranch.**
146.4 Fork. Geological Survey sign. Take left-hand road. Road on right goes to **Lewis Well** (3.3 miles), **good water,** and **Jaques ranch** (5.7 miles). This detour returns to main road in 6.4 miles.
148.2 Reverse fork. Road comes in on left from **Childs ranch** (7 miles).
152.5 Crossroads. Geological Survey sign. Keep to left. Faint road on right goes to Gunsight mine. Road from **Jaques ranch** and **Lewis Well** comes in on right.

153.5 **Gunsight ranch,** also called Blair's ranch. Improved highway is Pozo Blanco route to Tucson. (See p. 345.) Go through gate to Geological Survey sign. **Good water** in well on left. **No permanent water for 58 miles by this route.** Cross wash and bear to left, avoiding faint road which forks to right at mile 153.6 to Gunsight mine. This mine can be seen on the side of a large hill, a mile away. Road to **Pozo Redondo,** Charco de la Piedra, and Perigua (see p. 408) turns to left up wash from Geological Survey sign.

154.0 Fork. Geological Survey sign. Turn to left. Road on right is Cubo route. (See p. 348.)

154.1 Cross wash and faint road.

156.2 Cross wash.

156.8 Fork. Keep to left; road on right is an alternate road to Charco en Medio with no advantages.

158.9 Fork. Geological Survey sign. Turn to right.

159.2 Reverse fork. Alternate road comes in on right.

159.7 Fork. Keep to left.

161.1 Charco on right.

162.2 Charco en Medio. Summer ranchería; represo on right **usually dry.** Continue to east between houses and represo through gap in hills. Road to Charco de la Piedra, very faint, leads to left on west of houses. Road to Cubo goes to right on west of represo.

162.8 Small charco on left (north) of road.

163.3 Small charco on right (south) of road.

163.8 Cross difficult wash and swing to right out of gap in hills.

171.1 Three small black hills a quarter of mile north of road.

176.1 Small charco left of road.

177.6 Faint road comes in on left.

179.1 Corner of brush fence. Follow along fence.

179.3 Reverse fork. Geological Survey sign. **Turn to left around fence corner** Keep house with tin roof on right to small represo of Pisinemo. Road which comes in on right at the fork is the Cubo route. (See p. 348.)

179.7 Pisinemo. Summer ranchería; small represo on the left, about 12 houses, including small church and house with tin roof. **No permanent water.** Keep large represo on left and go southeast.

179.9 Cross wash.

182.3 Small represo.

182.5 Corral on right.

182.9 Hardimui. Summer ranchería. Geological Survey sign. **No permanent water.** With houses and corral on left run near brush fence of temporal and follow along fence and then turn to left around corner of brush fence.

183.3 Geological Survey sign. Go straight ahead to southeast. Hold to main traveled road. Road on right (southwest) leads to Comovo (5 miles). Road goes northeastward on south side of temporal to **Black Butte** (8 miles).

187.6 House on right; field on left.

188.0 Represo on right.

189.1 Faint road forks off on left.

190.0 Reverse fork. Geological Survey sign. Go southeast toward small hill in the plain. Road on right is Comovo route. (See p. 349.)

191.5 Cross small levee.

192.0 Houses on left.

192.2 Copeka. Summer ranchería. Road usually obliterated by trampling of cattle. Pass between corral and hill, and turn to east. **Water in pond several months a year.** It should be **boiled before drinking.** Road leads south from west side of pond to Tonukvo (2.6 miles). By turning to right and crossing main drain of valley just north of pond and going westward toward hills an old road will be found leading to Serventi Well and Menegers Dam. (See p. 395.)

199.0 Fork. Geological Survey sign at Big Fields. Keep to right. Alternate road to Indian Oasis on left. (See p. 345.)

201.5 County sign. Keep on south side of fences of Big Fields.

201.6 County sign; bear to left.

201.9 Corral and then represo, **usually dry,** on right.

209.7 Pass north and to left of fence corner, then follow south of fields.

210.0 Double reverse fork. Geological Survey sign. Roads come in from Tecolote and Mexico and from **James Well.**

210.8 Well on right; **no water obtainable.**

211.2 House on right. Go between hill and fence.

211.4 Geological Survey sign.

211.5 **Indian Oasis** (Sells post office); United States Indian Service well on left. Presbyterian Mission on right. Meals can usually be obtained there. **Good water** can be obtained from Government Well, Presbyterian Mission Well, and Menegers Well near arroyo. Store is on hill on left of Geological Survey sign, 0.4 mile by road. Continue due east on main road.

211.6 Government school on right.

212.0 **Artesa.** Winter ranchería; **well** on left.

213.2 Top of rocky hill.

213.4 Fork at foot of rocky hill. County sign. Road from Topahua forks to right.

213.5 Reverse fork. Road comes in on left from **Artesa Pond,** a quarter of a mile; **no drinking water.**

213.9 Fork. County sign on left. Road from Tucsoncito comes in on right.

216.2 Cross faint road from Tucsoncito to Jeowic.

217.0 Fork. Faint road comes in on right.

217.8 Reverse fork. County sign. Road from Magdalena, Tucsoncito, and Topahua comes in on right.

218.6 Pass Papago hut on right and go downhill.

218.9 Reverse fork. Faint road comes in through fields from Jeowic.

220.3 County sign on right. **Fresnal ranch** on left. Well now used by United States Indian Service, and **water can probably be obtained at all seasons.**

222.8 Fork. Faint road on left.

225.2 Fork. Keep to left. Road on right goes to **Babokuk,** winter ranchería and well; **water 2 miles southeast on this road.**

225.7 Cross a road leading from Babokuk to temporales.

226.7 Reverse fork. County sign; go straight ahead through gate. Road comes in on right from **Babokuk.**

227.8 Reverse fork. Geological Survey sign. Pozo Blanco route (see p. 345) comes in on left.

228.9 **San Vicente. Well,** store with limited amount of supplies, no gasoline.

229.3 Crossroads. Road on left leads from **Santa Rosa ranch** (8.2 miles); road on right goes to **Coronel** (1.1 miles). A small masonry dam at this place holds **water for a short time after rains.**

231.9 Faint road on right.
232.7 Fork. County sign. Keep to left, road on right goes to **Coyote,** winter ranchería, and well; **water half a mile by this road.**
232.8 Cross faint road.
233.5 Reverse fork. County sign. Road from **Coyote** comes in on right.
236.6 **Dobbs Well** on right. Water can be obtained with rope 55 feet long and bucket.
236.9 **Roadside mine** on left. Miners' shacks on right. **Water** and limited amount of supplies can be obtained here **when mine is being operated.**
238.7 Fork. Keep to left. Road on right goes to **Alamo,** winter ranchería, and well; **water a quarter of a mile on this road.**
238.9 Crossroads. Keep straight ahead. Road on right is second road to **Alamo.** Road on left goes to San Pedro, winter ranchería, and well **(4 miles).**
241.8 Fork. Keep to left. Road on right goes to Indian field.
243.5 Cross wash and travel on or beside graded road.
247.3 Beginning of macadam road, which continues for next 26 miles to Tucson.
247.9 Steel bridge over large arroyo.
249.5 Fork. County signpost. Stay on macadam road. Road on right to **Sasabe, La Osa,** and **Arivaca.** (For log see p. 355.)
249.6 **Robles ranch. Well and good water.**
251.3 Well on left.
259.0 Well on right. These wells were drilled for supplying water for road building; not certain whether they will be maintained as watering places.
262.3 Snyders Hill and quarry on right.
265.1 Reverse fork. Road from Mile Wide Copper Co. comes in on left. Thence through Robles Pass.
267.3 Quarry on right.
269.1 Crossroads. Turn to left. Road on right goes to **San Xavier Mission;** road straight ahead goes to Indian school and connects with valley roads.
272.3 Fork. Turn to right across bridge. Road straight ahead (north) goes to **Silver Bell.** (See p. 354.)
272.5 Concrete bridge over Santa Cruz River. Go eastward on Congress Street, passing station of El Paso & Southwestern Railroad on right.
272.9 **Tucson.** Post office, hotels, garages, and supplies.

NORTHERN ROAD BETWEEN INDIAN OASIS AND BIG FIELDS.

INDIAN OASIS TO GEOLOGICAL SURVEY SIGN AT BIG FIELDS (12.9 MILES).

[See p. 345 for log in opposite direction.]

This road branches from the main road at Indian Oasis and returns to it at Big Fields. It is only about half a mile longer than the route described on pages 336 and 343 and is often in better condition. (For log from Tucson to Indian Oasis see pp. 335–336.)

61.6 **Indian Oasis.** Geological Survey sign. Drive north.
62.4 Cross arroyo. **Menegers Well** on right.
62.7 Hill and Papago houses on right; thence between fences to fence corner.
63.0 Fence corner and fork. Turn to left (west) around fence corner. Road on right goes northwest to Iron Pipe, **Quijotoa, Santa Rosa,** and **Casa Grande.** (See p. 393.)

66.0 Represo on right.
70.9 House on left; numerous crossroads and branches from here on. Keep fields on left and go west.
71.5 Houses on left.
72.2 Big Fields. Represo on right, **usually dry.** Keep houses and fields on left. Numerous minor forks and crossroads.
74.5 Reverse fork. Geological Survey sign. This is the same fork as at mile 73.9 by the main or southern route. (See p. 336.)

GEOLOGICAL SURVEY SIGN AT BIG FIELDS TO INDIAN OASIS (12.9 MLES).

[See p. 344 for log in opposite direction.]

This road branches from the main Yuma–Tucson road at the Geological Survey sign just west of Big Fields and goes north of the temporales and houses to Indian Oasis. It is 0.6 mile longer but is often in better condition. (For log from Yuma to Big Fields see pp. 340–343.)

199.0 Fork west of Big Fields. Geological Survey sign. Keep to left, avoiding numerous minor forks and crossroads and keeping houses and fields on right. Route on right is the main or southern route.
201.3 Big Fields. Represo on left, **usually dry.**
202.0 Houses on right. Avoid numerous minor forks and crossroads. Keep fields on right.
202.6 House on right.
207.5 Represo on left.
210.5 Fence corner and reverse fork. Turn to right and go south between fences. Road from Iron Pipe, **Quijotoa, Santa Rosa,** and **Casa Grande** (see p. 393) comes in on left.
210.8 Hill and Papago houses on left.
211.1 Cross arroyo. **Menegers Well** on left.
211.9 **Indian Oasis.** Geological Survey sign. This is the same point as mile 211.3 on the main route. (See p. 343.)

POZO BLANCO ROUTE.

TUCSON TO AJO (126.6 MILES).

[See pp. 346–347 for log in opposite direction.]

The Pozo Blanco route turns off the main road from Tucson to Ajo at the north end of Baboquivari Mountains and returns near Gunsight ranch. It is somewhat more hilly and in wet weather more passable than the old main road. Its principal advantage lies in the facts that the watering places are wells and that it has been recently improved. (For detailed log of road from Tucson to fork of Pozo Blanco route see p. 335.)

0.0 **Tucson.**
23.3 **Robles Well.**
36.3 **Dobbs Well.**
44.0 **San Vicente.**
45.1 Fork. Beginning of Pozo Blanco route. Geological Survey sign. Take right-hand road; left-hand road is old main road by way of Indian Oasis.
47.6 Fence corner; follow along north side of fence.
50.5 Fork. Road on right to Compartidero represo and **Santa Rosa ranch,** deep well.

51.2 Gate. Turn to left through gate and then to right along south side of fence. Go to south of isolated Woods Hill into gap.

54.4 **Comobabi.** Winter ranchería, in pass between North Comobabi and South Comobabi mountains; **two dug wells** and village south of road. Proceed west along northern border of South Comobabi Mountains.

55.0 Divide. Go west.

59.4 Fork; keep to right. This and next road go to **Cobabi,** winter ranchería, dug well.

61.0 Fork; keep to right.

62.0 Crossroads. Continue west. This and next two roads go to **Cobabi** and near-by mines.

64.9 Crossroads.

65.3 Crossroads.

68.6 Fields and houses on right for next half mile.

70.3 Sikulhimakt. Represo inside of mesquite corral in center of Santa Rosa Valley. Go west on north side of represo. Road from Casa Grande to Tecolote and Mexico goes through this place.

71.1 Small represo on left. Follow main traveled road to west and northwest, avoiding numerous roads turning west to **Horseshoe,** Quijotoa post office.

76.3 **Well.** Most easterly well of village of **Covered Wells.**

76.7 **Well.**

78.1 Spears's store. **Water,** gasoline, oil, and supplies.

78.6 **West wells of Covered Wells.** Two dug wells, firm, hard road, hilly to Pozo Blanco. Avoid fork on right. (See p. 377.)

83.5 **Pozo Blanco.** Winter ranchería; **well** on right hand in corrals; **water good but should be boiled.** Go west toward gap on right hand (north) of large black hill. Road to Pisinemo goes off on left between houses and passes south of large black hill.

84.1 Reverse fork. Road comes in on right from **Brownell** and **Black Prince mine.**

85.1 Fork. Geological Survey sign. Take road on left across valley to small conical butte called Ninemile Peak; road on right leads to unnamed temporales and thence to Perigua.

89.6 Crossroads just east of abandoned temporal. Continue west.

93.2 Cross main drain of Quijotoa Valley. Small charco on right; abandoned temporal on left. New graded road begins near this point.

101.8 Ninemile Peak on left.

105.2 Reverse fork. Geological Survey sign. Charco en Medio route comes in on left.

106.3 Reverse fork. Alternate road from Charco en Medio comes in on left.

109.1 Reverse fork. Geological Survey sign. Cubo route comes in on left. From here road is same as that given in log of main route.

111.1 **Gunsight ranch.**

126.6 **Ajo.**

AJO TO TUCSON (126.4 MILES).

[See pp. 345–346 for log in opposite direction.]

The Pozo Blanco route turns off the old main road from Ajo to Tucson near Gunsight ranch and returns at the north end of the Baboquivari Mountains. It is somewhat more hilly and in wet weather more passable than the main road. Its principal advantage lies in the fact that the watering places are wells and thus more dependable in very dry weather. (For detailed log of road from Ajo to fork of Pozo Blanco route see pp. 341–342.

0.0 **Ajo.**
16.8 **Gunsight ranch.**
17.3 Fork. Geological Survey sign. Cubo route comes in on left. (See p. 348.)
20.1 Fork. Keep to right. Road on left is alternate road to Charco en Medio.
21.2 Fork. Geological Survey sign. Keep to left. Main route through Charco en Medio on right.
25.2 Ninemile Peak on right.
35.1 Cross main drain of Quijotoa Valley. Small charco on left; abandoned temporal on right.
36.7 Crossroads just east of abandoned temporal; continue east.
42.2 Reverse fork. Geological Survey sign. Keep straight on. Road on left leads from unnamed temporales and Perigua.
43.1 Fork. Keep to right. Road to right goes to **Black Prince mine** and **Brownell.**
43.7 **Pozo Blanco.** Winter ranchería. Well on left in corrals. **Water good but should be boiled.** Continue east through pass. Road from Pisinemo comes in on right.
47.3 **West wells of Covered Wells.** Keep wells on right and follow down rocky valley with scattered houses.
48.5 Spears's store. **Water,** gasoline, oil, and supplies.
49.9 **Well.**
50.3 **Well.** Most easterly well of village of **Covered Wells.** Avoid roads to left and turn southwest over gravelly slopes, then avoid several forks to right, which lead to **Horseshoe,** Quijotoa post office.
55.5 Small represo on right.
56.3 Sikulhimakt. Represo inside of mesquite corral in center of Santa Rosa Valley. Go east through abandoned fields toward pass between North Comobabi and South Comobabi mountains. Road from Casa Grande to Tecolote and Mexico goes through this place.
57.5 Fields and houses on left for next half mile.
61.3 Crossroads. Continue east. This and next two roads go to **Cobabi,** winter ranchería and dug well, and near-by mines.
62.7 Crossroads.
64.6 Crossroads.
65.6 Reverse fork. This and next road come from **Cobabi.**
67.2 Reverse fork.
71.6 Divide. Go down slope.
72.2 **Comobabi.** Winter ranchería in pass between North and South Comobabi Mountains; **two dug wells** and village south of road. Turn southeast toward north end of Baboquivari Mountains; road later turns east, south of isolated Woods Hill, and runs along south side of fence.
75.4 Turn to left through gate and go along north side of fence.
76.1 Fork. Keep along fence; road on left to Compartidero and **Santa Rosa ranch.**
79.0 Fence corner; turn to right.
81.5 Reverse fork. Geological Survey sign. From here the route is the same as the old main route. (See p. 343.)
82.6 **San Vicente.**
90.3 **Dobbs well.**
103.3 **Robles well.**
126.6 **Tucson.**

CUBO ROUTE.

TUCSON TO AJO (138.7 MILES[5]).

[See below for log in opposite direction.]

After passing through Indian Oasis and Copeka one may go from Pisinemo by way of Cubo to Gunsight ranch. This route is slightly better in dry weather and because it passes close to Walls Well the distance without water is 3 miles less. In wet weather the main drain of Quijotoa Valley on this route is almost impassable for automobiles because of mud. (For detailed log of road from Tucson to Pisinemo see pp. 335–337.)

0.0 **Tucson.**
61.4 **Indian Oasis.** Nearest permanent water is **Walls Well,** 55 miles by this route.
80.7 Copeka.
90.0 Hardimui.
93.2 Pisinemo.
93.6 Fork at corner of brush fence. Geological Survey sign. Take left-hand road; right-hand road is Charco en Medio route.
96.4 Cross main drain of valley; steep clay banks, difficult in wet weather.
103.3 Small charco on right.
105.1 Small charco on right.
106.7 Reverse fork. Continue west into gap in hills. Geological Survey sign. Comovo route comes in on left. Second road comes in on left (south) from Charco Colorado, and Menegers Dam. (See pp. 401–402.)
107.2 Cubo. Charco on left; **water for only a short period after rains;** houses and corral on right. Continue west with field on left; then between fences. Road to Charco en Medio goes to right (east) of corral. (See p. 399.)
109.6 Reverse fork. At west end of gap. Geological Survey sign; turn to right. Road on left comes in from Cochibo and Menegers Dam. (See p. 401.)
115.0 Faint road comes in on left.
115.4 Cross rocky gap.
115.6 Fork. Geological Survey sign. Left-hand road leads to **Walls Well, nearest water 1 mile by this road;** keep to right.
116.1 Cross a road from **Walls Well** to mining claims.
116.5 Reverse fork. Geological Survey sign. Road comes in on left from Walls Well.
121.4 Reverse fork. Geological Survey sign. Pozo Blanco and Charco en Medio routes come in on right.
121.9 **Gunsight ranch.**
138.7 **Ajo.**

AJO TO TUCSON (138.7 MILES).

[See above for log in opposite direction.]

After passing through Gunsight ranch one may go to Indian Oasis by way of Cubo. This route is usually slightly better in dry weather, and because it passes close to Walls Well the distance without water is 3 miles less. In wet weather the main drain of Quijotoa Valley on this route is almost impassable for automobiles because of mud. (For detailed log of road from Ajo to Gunsight ranch see p. 341.)

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[5] Distance from Gunsight ranch to Ajo by new road is 15.5 miles, or 1.3 miles less than distance given.

136.7 **Ajo.**
153.5 **Gunsight ranch.**
154.0 Fork. Geological Survey sign. Keep to right. Road on left is main route by way of Charco en Medio (see p. 342) and Pozo Blanco route (see p. 347).
158.9 Fork. Geological Survey sign. Keep to left. Road on right goes to **Walls Well; nearest water 1 mile by this road.**
159.3 Crossroad from **Walls Well** to mining claims.
159.8 Reverse fork. Geological Survey sign. Road from **Walls Well** comes in on right.
160.0 Cross rocky gap and go southeastward along eastern margin of Barajita Valley. Numerous charcos along road.
160.4 Faint road on right.
165.8 Fork. Geological Survey sign. Turn to left into gap in hills and proceed through and alongside of fields. Road on right goes to Cochibo and Menegers Dam.
168.2 Cubo. Charco on right; **water for only a brief period after rains;** houses and corral on left. Continue east from end of charco; hills and small field on right. Road to Charco en Medio goes north on east side of corral. (See p. 399.)
168.7 Double fork. Geological Survey sign. Keep to left. Middle road is Comovo route (see below); road on right (south) goes to Charco Colorado and Menegers Dam (see p. 400).
170.3 Small charco on left.
172.1 Small charco on left.
179.0 Cross main drain of valley; steep clay banks, difficult in wet weather.
181.8 Reverse fork at corner of brush fence. Geological Survey sign. Follow south side of brush fence, keeping house with tin roof on right, to small represo. Road which comes in on left is main route by way of Charco en Medio.
182.2 Pisinemo. Same as mile 179.7 by the old main route. (For detailed log see pp. 342–344.)
185.5 Hardimui.
194.7 Copeka.
214.0 **Indian Oasis.**
275.4 **Tucson.**

COMOVO ROUTE.

TUCSON TO AJO (137.8 MILES [6]).

[See p. 350 for log in opposite direction.]

After passing through Indian Oasis and Copeka, one may go by way of Comovo to Cubo and the Gunsight ranch. This is really a variation on the Cubo route. It is little used because it is sandy between Copeka and Comovo, but in wet weather it has many advantages. (For log of route from Tucson to Indian Oasis see pp. 334–336.)

0.0 **Tucson.**
61.4 **Indian Oasis.** By this route the nearest permanent water to Indian Oasis is **Walls Well** (53.2 miles).
80.7 Copeka.

[6] Distance from Gunsight ranch to Ajo is now 15.5 miles, or 1.3 miles less than distance given.

82.9 Fork. Geological Survey sign. Turn to left across wash. Road on right goes to Pisinemo, main and Cubo routes. (See pp. 336, 338.)
83.7 Fence corner of Indian field on right.
87.6 Cross a road.
90.6 Double reverse fork. On right wooden cross on adobe platform. Go to right of pond toward white church. This fork is in a sandy area, and wheel ruts are usually obliterated by cattle. Roads go from here to Hardimui (5 miles) and Pisinemo (5.7 miles).
90.8 Comovo. **Water in pond for several months during the year; should be boiled before drinking.** Road obliterated by trampling of cattle; church and corral on left. Go west toward north end of Mesquite Mountains. Road to **Mesquite Tank,** Menegers Dam, and Mexico goes south from corral. (See p. 397.)
95.2 Hills of northern border of Mesquite Mountains follow on northwest side of hills.
104.7 Reverse fork. Geological Survey sign. Cubo route comes in on right. Road comes in from south slightly before Cubo route. It leads from Menegers Dam and Charco Colorado. (See p. 400.)
104.8 Field on left.
105.3 Cubo. From this point follow log given on page 348 to **Gunsight ranch.**
120.0 **Gunsight ranch.**
137.8 **Ajo.**

AJO TO TUCSON (137.8 MILES).

[See pp. 349–350 for log in opposite direction.]

After passing through Gunsight ranch and Cubo one may go by way of Comovo to Copeka and Indian Oasis. This is really a variation on the Cubo route. It is little used, because it is sandy between Comovo and Copeka, but in wet weather it has many advantages.

136.7 **Ajo.**
153.5 **Gunsight ranch.** Follow log on page 349 to Cubo.
168.2 Cubo.
168.7 Double fork. Geological Survey sign. Take middle road due east. Left-hand road is Cubo route (see p. 348), and right-hand road goes to Charco Colorado and Menegers Dam (see p. 400).
173.1 Northeast point of Mesquite Mountains. Go east to village visible across the plain.
182.6 Comovo. **Water in pond for several months during the year; should be boiled before drinking.** Road obliterated by trampling of cattle. Turn to left at church and go north of represo to a wooden cross on adobe platform near fork. Road to Mesquite Tank, Menegers Dam, and Mexico goes south from corral. (See p. 397.)
182.8 Double fork. Take right-hand road along base of Copeka Mountains. Middle road goes to Hardimui (5 miles) and road on left to Pisinemo (5.7 miles).
185.8 Crossroad.
189.7 Fence corner of Indian field on left.
190.5 Reverse fork. Geological Survey sign. Go southeast toward small sandy hill. This is Tucson-Yuma road, main and Cubo routes. Follow log on p. 342.
192.7 Copeka.
212.0 **Indian Oasis.** For detailed log of route from Indian Oasis to Tucson see pages 343–344.
273.4 **Tucson.**

TUCSON-NOGALES HIGHWAY.

TUCSON TO NOGALES (69.2 MILES).

[See p. 352 for log in opposite direction.]

Routes from Tucson to Nogales follow Santa Cruz Creek to Calabasas and thence go up Potrero Creek to Nogales. By cooperation between Pima County, Santa Cruz County, and the State of Arizona a well-graded and macadamized road was under construction in 1917. The log here presented was made before construction was complete, and certain details are now obsolete. The road is well marked, however, and wells will be found every few miles. Before the completion of the road it was a common practice to go to Nogales by way of Mineral Hill and Twin Buttes. This road and its junction with the Tucson-Nogales Highway is described on page 353.

0.0 **Tucson.** Post office, **water supply,** hotels, garages, all supplies and repair parts. Go south from post office on Stone Avenue and at edge of town take macadam road going south.
2.9 Cross railroad, avoiding road on left.
5.0 Turn to left and then to right and follow railroad on west side.
11.5 Cross railroad to east side.
16.3 Turn sharply to right and then to left.
20.3 **Sahuarito.** Road comes in from west side of valley and Twin Buttes. (See p. 353.)
25.6 Cross to west side of railroad to **Canoa ranch.** Follow railroad.
29.4 Turn to right and cross Santa Cruz River.
30.4 Come into road on west side of valley and turn to left (south). Road on right comes from Twin Buttes. (See p. 353.)
37.4 Store and **well.** Crossroads. Keep straight on south. Road on right goes to Ward and other points in Sierrita Mountains. Road on left goes to Agua Caliente in Patagonia Mountains.
39.5 Fork. Keep to left. Right-hand road is northern road to Arivaca. (See p. 357.)
39.7 **Reventon ranch.**
40.1 Amado. Fork. Keep to right. Right-hand road goes to Arivaca. (See p. 357.)
41.2 Fork. Keep to right; road on left goes east to railroad.
42.6 Fork. Keep to right. Road on left goes to ranch in valley.
46.9 **Tubac.** Post office, **numerous wells,** stores. Go to left of church, turn, and keep post office on left.
48.7 **Store and well.** Avoid road that goes to left and continue south.
50.0 **Tumacacori Mission** on left. Water can be obtained from caretaker.
50.7 Beginning of graded road as completed in 1917.
51.5 House and **wells** on both sides of road for next 2 miles.
54.3 Schoolhouse on left.
59.2 **Well** on left.
60.4 **Calabasas Store.** Well on left.
61.9 Reverse fork and bridge across Potrero Creek. Road from Arivaca by way of Montana mine comes in on right. (See p. 359.)
63.4 **Saxton Dairy.** Well and good water.
63.9 Cross bridge and go through lane between rows of willow trees.
65.9 **Ranger station** and well on left. The forest ranger located here will give detailed information on roads in the mountains to the west.
66.2 Benedict railroad station on left.

66.5 **Monte Carlo Dairy** on right. Well and good water.
68.0 Reverse fork.
68.4 Cross bridge over Potrero Creek.
69.1 Turn to right into Main Street, Nogales.
69.2 **Nogales.** Post office, **water supply,** hotels, garages, and supplies of all kinds.

NOGALES TO TUCSON (69.2 MILES).

[See pp. 351–352 for log in opposite direction.]

0.0 **Nogales.** Go north on Main Street.
0.1 Turn to right and cross railroad tracks.
0.2 Turn to left in front of Santa Cruz courthouse.
0.8 Cross bridge over Potrero Creek.
1.2 Fork. Turn to right and follow well-graded State highway.
2.7 **Monte Carlo Dairy** on left. Well and good water.
3.0 Benedict. Railroad station on right.
3.3 **Ranger station** and well on left. The forest ranger located here will give detailed information on roads in mountains to west.
4.5 Beginning of lane between rows of large willows.
5.3 Cross bridge.
5.8 **Saxton Dairy.** Well and good water.
7.3 Cross bridge. Fork; keep to right along valley on graded road. Road to left is the Nogales-Arivaca road by way of Montana mine. (See p. 359.)
8.8 **Calabasas store.** Well on right.
10.0 **Well** on right.
14.9 Schoolhouse on right.
15.7 **Houses and wells** on both sides of roads for next 2 miles.
18.5 End of graded road as completed in 1917.
19.2 **Tumacacori Mission** on right. Water can be obtained from caretaker.
20.5 **Store and well.** Avoid road that goes to right and continue north.
22.3 **Tubac.** Post office, **numerous wells,** store. There are wells at each house north and south of the town. Turn to left at post office and then to right in front of church.
26.6 Fork. Keep to left. Road on right goes to ranch in valley.
28.0 Fork. Keep to left. Road on right goes east to railroad.
29.1 Amado. Fork. Keep to right. Left-hand road goes to Arivaca. (See p. 357.)
29.5 **Reventon ranch.**
29.7 Fork. Keep to right. Left-hand road goes to Arivaca. (See p. 357.)
31.8 **Store and well.** Crossroads. Keep straight on north down valley. Road on right goes to Agua Caliente in the Patagonia Mountains. Road on left goes to Ward and other points in the Sierrita Mountains.
38.8 Fork. Turn to right and cross Santa Cruz Creek to State highway on east bank. In 1917 the best crossing was 3 miles farther north. Follow on west side of railroad. Left-hand road goes north on west side and crosses at Sahuarito to rejoin this road at mile 48.9. (See p. 353.)
43.6 Cross to east side of railroad and follow well-graded road into Tucson.
48.9 **Sahuarito.** Road from west side of valley and Twin Buttes comes in on left. (See p. 353.)
52.7 Turn sharply to right and then to left.
57.7 Cross railroad and follow on west side of it.
63.7 Turn to left (west) and then to right (north).
66.3 Cross railroad and go north into city.
69.2 **Tucson.**

TUCSON-NOGALES ROAD BY WAY OF SAN XAVIER AND TWIN BUTTES.

TUCSON TO NOGALES (75.3 MILES).

[See p. 354 for log in opposite direction.]

This road consists of an excellent graded highway to San Xavier Mission and a good desert road to Twin Buttes, from which it connects with the Tucson-Nogales Highway by two routes. Before construction had progressed so far on the Tucson-Nogales road this route was often preferred. The distances given are measured from the map.

0.0 **Tucson.** From the post office go north to Congress Street, then west, passing El Paso & Southwestern Railroad station on left.

0.4 Santa Cruz River.

0.6 Come into north-south road. Turn to left along base of Sentinel Hill. Right-hand road goes to **Silver Bell.** (See p. 354.)

3.8 Crossroads. Continue south. Road on right (west) is Tucson-Yuma road; road on left (east) goes to Indian school and connects with valley roads.

7.2 Crossroad. Continue straight ahead. This is road from the valley to **Robles ranch,** 18 miles.

9.2 Graded road; turn to left (east) at this point to **San Xavier del Bac** at mile 9.6. Besides the church there is a small Papago village, **wells,** and the United States Indian Service agency. From San Xavier a road runs south to Sahuarito. However, there are so many cross-roads and turnouts that persons without much local experience get lost. Continue south from turn at mile 9.2, avoiding roads that fork to left.

12.1 Fork at foot of black buttes; take left-hand road toward whitish hill about 8 miles across the plain to the west of south. Road on right goes to numerous prospects in Sierrita Mountains and to **Stevens,** 22 miles, where there is good water.

20.1 **Mineral Hill.** Several mines in vicinity; **water from wells,** store, and gasoline, when mines are being worked. A road goes east to Sahuarito, 9 miles. From the store at Mineral Hill go southwest and then southeast over good road, which has, however, many short, steep grades and pitches. There are many prospects along this road, the branch roads to which are not shown on the map.

21.9 Fork. Take left-hand road to Twin Buttes, easily visible; right-hand road goes along east face of Sierrita Mountains.

27.0 Twin Buttes. Mine, connected with Santa Cruz Valley by short railroad; post office, store, gasoline, **water supply when mine is being operated.** Fork just east of town; take right-hand road going south of railroad; left-hand road goes to Sahuarito (7 miles).

31.5 Reverse fork. Come into north-south road in Santa Cruz Valley; from this point turn south toward Nogales; the road on left (north) goes to Sahuarito (5 miles).

36.5 Reverse fork. Come into Tucson-Nogales Highway; continue south. This is mile 30.4 out of Tucson and is 38.8 miles from Nogales. (For log into Nogales see p. 351.)

75.3 **Nogales.**

NOGALES TO TUCSON (75.3 MILES).

[See p. 353 for log in opposite direction.]

0.0 Nogales. Follow Nogales-Tucson Highway, log of which is given on page 352.

38.8 Fork. Take left-hand ungraded road north; graded road turns to right and reaches Tucson in 30.4 miles.

43.8 Fork. Take left-hand road northwest; right-hand road goes north to Sahuarito and joins Tucson-Nogales Highway in 5 miles.

48.3 Reverse fork on east of Twin Buttes. Road from Sahuarito (7 miles) comes in on right. Go through town, which, when mine is running, has a post office, **water supply,** store, and gasoline, and go northwest over good road, which has, however, many short, steep grades and pitches.

53.4 Reverse fork. Road comes in on left. There are many prospects between this point and Mineral Hill, but the branch roads are not shown on the map.

55.2 **Mineral Hill. Water from wells,** store, and gasoline when mine is being worked. A road goes east from this point to Sahuarito (9 miles). Go slightly east of north over open plain to black buttes.

63.2 Reverse fork at foot of buttes. Road from **Stevens** and from numerous prospects in the Sierrita Mountains comes in on left. Stevens is 22 miles distant and has good water.

66.1 Fork. Come into graded road and go north; the graded road turns east to **San Xavier del Bac** at mile 66.5. Besides the church there is a small Papago village, **wells,** and the United States Indian Service agency.

68.1 Crossroads; continue north. This is road from the valley to **Robles ranch,** 18 miles.

72.5 Crossroads. Continue north around foot of Sentinel Hill. Road on right goes to Indian school and connects with valley roads; road on left is Tucson-Yuma road. (See p. 334.)

74.7 Fork. Turn to right (east) into Tucson; road straight ahead goes to **Silver Bell.** (See below.)

74.9 Cross concrete bridge over Santa Cruz River and go east on Congress Street.

75.3 **Tucson.**

SILVER BELL ROAD.

The road from Tucson to Silver Bell is an important route which, because of the rapid development of the country, has undergone a number of changes in position. It was not traversed during this survey. The position as given on the map is, for the first 20 miles, the route surveyed by the county engineer. West of the Tucson Mountains the position is that given by township plats.

The Silver Bell road turns off to the north from the Tucson-Yuma road, 0.6 mile from the post office at Tucson. (See log on p. 334.) It follows the west side of Santa Cruz Valley for 13 miles. About 9 miles out a road turns off to the left (west) through a gap in the Tucson Mountains and goes to Silver Bell by way of the gap between the Silver Bell and Waterman mountains. The character of this road is not known. The usual route continues for 4 miles down the valley and then turns west through a gap in the mountains, which are at this point rather narrow. West of the gap 4½ miles and about 20 miles out of Tucson the road forks. The right-hand road goes north of Silver Bell Mountains by way of Valenzuela and then crosses the railroad and turns south to the town. The exact location of this road was not obtained, but such roads as

appear on township plats are shown on Plate XXV. The left-hand road crosses Avra Valley to a well on the south side of the Silver Bell Mountains. Thence it goes through the gap between these mountains and the Waterman Mountains and turns north to Silver Bell. The total distance from Tucson to Silver Bell is about 40 miles.

ROUTES IN AND TO THE ALTAR VALLEY.

There are three routes into Altar Valley. The first of these runs from Tucson to Robles ranch and thence south along the axis of the valley to Sasabe, and the log is given under the name Tucson-Sasabe road. In 1921 a graded highway was under construction from Robles ranch south. The second route ascends the valley of Sopori Creek from the Tucson–Nogales road in Santa Cruz Valley to Arivaca and goes thence into Altar Valley. This is the oldest route, and the log is given under the name Arivaca road. The third route crosses the Pajarito Mountains from Nogales to Arivaca and the log is given under the name Nogales-Arivaca road.

TUCSON-SASABE ROAD (70.9 MILES).

TUCSON TO SASABE.

[See p. 335 for log in opposite direction.]

Follow the Tucson–Yuma road through Robles Pass to Robles ranch over good macadam road. (For detailed log, see p. 335.)

0.0 **Tucson.**
23.3 **Robles ranch.**
23.4 Fork. County sign. Turn to left (south) over fair road, crossing numerous washes. Road on right is Tucson-Yuma road. (See p. 335.)
28.6 **King Well.** House, corrals. **Deep well** and pumping plant, iron tanks.
29.6 Hayfield on right in bottom land.
31.9 **Anvil Ranch. Two deep wells** and pumping plant. From this ranch roads run to Leon and Redondo. Go south, keeping left of wire fence.
33.9 End of fence. A road on left leads to Sierrita Mountains.
34.5 Bluffs on left.
36.1 Ruined house on right.
38.7 **Palo Alto. Deep well** and pumping plant on right, large iron tanks. Store on left.
39.4 Go through fence.
39.5 Represo on right.
40.4 Fork. Keep to right on graded road.
41.2 Fork. Keep to left on graded road.
41.7 Turn sharply to right (west) and cross main arroyo of valley.
42.6 Fork. Keep to right. Left-hand road goes to **Espinoso Well** (2.5 miles), **Pozo Nuevo** (4 miles), and **Secundino Well** (10 miles).
42.7 Crossroads. Keep straight on. This road goes to Otero ranch and Contreras.
48.6 Crossroads. Continue southwest. This is road from **Pozo Nuevo** to **Ronstadt ranch.** Going west on this road the first right-hand turn goes to **Brown Well** (4 miles). Taking the left-hand turn two valleys are crossed and then there is a fork in the third valley. The right-hand turn goes to **Schaefer Well** (9 miles) and **Baboquivari mine** (10 miles). These places are in a canyon which heads at the foot of Baboquivari Peak. The left-hand turn goes to **Ronstadt ranch** (10 miles).

53.8 Reverse fork, at fence corner. Turn to right. Road comes in from **Secundino Well** (3 miles).

54.0 Fork. Wooden signboard. Keep to left. By right-hand road it is 0.9 mile to gate in north–south fence called the Ronstadt gate. From this gate go west 5.7 miles to forks on edge of bluff. Down the bluff to the right 0.3 mile is the **Ronstadt ranch** and wells. Continue west through fence 1.3 miles to **Las Moras ranch,** headquarters of the La Osa Land & Cattle Co.

55.0 Crossroads. Continue south. This is the road from Ronstadt gate to Figueroa ranch (5.5 miles). It is part of the direct route from Arivaca to Las Moras ranch. (See p. 357.)

55.9 Fork on south side of gate. Keep to right.

57.0 Nunrerous crossroads in next mile.

59.5 Gate. Go through and follow south along west side of north and south fence.

61.5 Crossroads at fence corner. Continue south. This is road from Las Moras ranch to **Buenos Aires Well** and **Aguirre Lake.** It is 8 miles to Las Moras and 1.1 miles to **Buenos Aires Well.**

62.0 Fork. Keep straight ahead. Road on left is second road to **Buenos Aires Well.**

66.0 Fork. Keep to left. Right-hand road leads to **La Osa,** post office, **water** and store (2.5 miles).

68.5 Fork at gate. Go through gate.

68.6 **San Fernando. Water,** store, and United States customhouse. Road crosses into Mexico from San Fernando and is often preferred to the old road through Sasabe. Return to gate.

68.7 Gate. Turn to right (east) along fence to go to **Sasabe.** Road on left (west) comes from **La Osa** (1.6 miles).

70.7 Reverse fork. Go south between fences. Road comes in from **Garcia ranch** and **Arivaca.**

70.9 **Sasabe.** A store on the boundary line; well three-tenths of a mile west.

SASABE TO TUCSON (70.9 MILES).

[See pp. 355–356 for log in opposite direction.]

0.0 **Sasabe,** store on the boundary line; **well** 0.3 mile west.

0.2 Fork. **Turn** to left. Road on right goes to **Garcia ranch** and **Arivaca.** (See p. 360.) On account of fences travelers to Arivaca should go by route of this log to Buenos Aires and thence follow log on page 358.

2.2 Gate and fork. Turn through gate.

2.3 **San Fernando. Water,** store, and United States customhouse. Road crosses into Mexico from San Fernando and is often preferred to the old road through Sasabe. Return to gate.

2.4 Go north. Road on left (west) leads to **La Osa,** post office, **water,** store (1.6 miles). Road on east (right) leads to **Sasabe** (2.2 miles).

4.9 Reverse fork. Road comes in on left from **La Osa** (2.5 miles).

8.9 Fork. Keep straight ahead. Road on right goes to **Buenos Aires Well** (1.2 miles) and thence to Figueroa ranch and **Arivaca.** (See p. 388.)

9.4 Crossroads. Keep straight ahead and follow west side of north and south fence. Road on right is second road to **Buenos Aires.** Road on left leads to **Las Moras ranch** and **well** (8 miles).

11.4 Gate. Go through and turn northeast.

12.9 Numerous crossroads in next mile.

15.0 Reverse fork on south side of gate. Go through gate.

15.9 Crossroads. Keep straight ahead. This is road from Arivaca to Ronstadt gate and Las Moras. (See p. 358.)
16.9 Reverse fork. Wooden signboard. Road on left comes in from Ronstadt gate (0.9 mile). From this gate it is 5.7 miles to a fork on the edge of a bluff. Down the bluff to the right 0.3 mile is the **Ronstadt ranch** and well. Continue to left (west) through fence 1.3 miles to **Las Moras ranch** and **well,** headquarters of the La Osa Land & Cattle Co.
17.1 Fork. Keep to left. The right-hand road goes to **Secundino Well** (3 miles).
22.3 Crossroads. Continue northeast. This road is from **Pozo Nuevo** to Ronstadt ranch and other places in the vicinity.
28.6 Crossroads. Keep straight on. This road goes from **Espinoso Well** to Otero ranch and Contreras.
28.7 Reverse fork. Turn to right and cross main wash. Right-hand road comes from **Espinoso Well** (2.5 miles), **Pozo Nuevo** (4 miles), and **Secundino Well** (10 miles).
29.2 Turn to left and follow down valley under bluffs.
29.7 Reverse fork.
30.5 Reverse fork.
31.4 Represo on left.
31.5 Go through fence.
32.2 **Palo Alto.** Deep **well** and pumping plant on left. Store on right.
34.8 Ruined house on left.
37.0 Follow east side of fence. Road on right to the Sierrita Mountains.
39.0 **Anvil ranch. Two deep wells** and pumping plant. Road leads from Anvil ranch to Leon and Redondo.
41.3 Hayfield on left.
42.3 **King Well.** House, corral, and **deep well** and pumping plant.
47.5 Reverse fork. County sign. Turn to left on main Yuma-Tucson road.
47.6 **Robles ranch.** For detailed log into Tucson see page 344.
70.9 **Tucson.**

ARIVACA ROAD.

AMADO TO RONSTADT GATE (33.6 MILES).

[See pp. 358–359 for log in opposite direction.]

This road starts from Santa Cruz Valley at its junction with Sopori Creek. Two roads lead up Sopori Creek, one on the north bank and the other on the south bank. The distance is virtually the same by either, but the south road was usually traveled in 1917. The junction of the north road with the Tucson-Nogales road is 39.5 miles from Tucson and 29.7 miles from Nogales. The junction of the south road is 40.1 miles from Tucson and 29.1 miles from Nogales. The road was not traversed between Sopori Junction and Arivaca, and distances are given as measured on the map for this part of the road. There are doubtless many more branch roads than are shown on the map.

0.0 Amado, by southern road.
4.0 Cross creek to north side and join northern road.
11.0 **Moyza Well.** Fork. Take right-hand road; left-hand road follows creek. Distance is 2 miles farther and there are numerous gates.
14.0 Fork. Keep to left past Tajo mine. Cerro Colorado mine is about 1 mile north of road at foot of Cerro Colorado Mountains. Road on right goes to Moreno ranch (5 miles).

17.0 Reverse fork. Road comes in on right. This road goes north of the Guijas Mountains to **Conte ranch** (1 mile) and **Robledo ranch** (5 miles). Thence down Guijas Wash to **Martinez ranch** (6.5 miles) and to **Secundino Well** in the Altar Valley (10.5 miles).
19.8 Reverse fork.
21.0 **Arivaca.** Post office, **water,** supplies, hotel, stores, gasoline. (For other roads out of Arivaca see p. 360.) To reach Altar Valley go west along main street, turn sharply to right at last house, and go west along north side of Arivaca Creek.
22.3 Go over rocky knoll.
23.0 Fork. Keep to right along bluff.
23.6 Go over rocky knoll.
24.2 Go up onto gravel bench.
24.9 Road on left leads to ranch house.
25.3 Go into creek and follow creek bed for eight-tenths of a mile. **There is usually water in this part of the creek.**
28.1 Figueroa ranch. **No well here; water in emergencies only.** Go west into valley.
28.7 Fork. Take right-hand road along south side of fence. Left-hand road is described in the log on page 360.
29.9 Turn corner and go north through lane.
30.9 Go northwest.
33.6 Ronstadt gate. From this gate all points in Altar Valley can be reached. (See log of Tucson-Sasabe road, p. 355.)

RONSTADT GATE TO AMADO (33.6 MILES).

[See pp. 357–358 for log in opposite direction.]

This road runs from the Ronstadt gate, a central point in the Altar Valley (see p. 355), to the Santa Cruz Valley by way of Arivaca and Sopori Creek.

0.0 Ronstadt gate. For other roads from this gate see page 356. Go southeast.
0.7 Crossroads. Continue straight ahead. This is the Tucson-Sasabe road.
2.7 Turn south in lane between fences.
3.7 Turn east along fence.
4.9 Reverse fork. Cross valley. Road on right comes in from **Aguajita** (4.8 miles) and **Buenos Aires** (7.4 miles). (See p. 360.)
5.5 Figueroa ranch. **No well here; water in emergencies only.** Go east up Arivaca Creek.
7.5 Go into creek and follow creek bed for eight-tenths of a mile. **There is usually water in the creek here.**
8.7 Road on right goes to ranch house.
10.0 Go over rocky knoll.
10.6 Reverse fork.
11.3 Go over rocky knoll.
12.6 **Arivaca.** Post office, **water supply,** hotel, stores, gasoline. (For other roads out of Arivaca see p. 359.) Continue east.
13.8 Fork. Take left-hand road; road on right goes to **Arivaca ranch** and then down Sopori Creek and rejoins this road at **Moyza.** The distance is 2 miles farther and there are numerous gates.

16.6 Fork. Keep to right; road on left goes north of the Guijas Mountains to **Conte ranch** (1 mile) and **Robledo ranch** (5 miles), thence down Guijas Wash to **Martinez ranch** (6.5 miles) and **Secundino Well** in Altar Valley (10.5 miles).

19.6 Reverse fork. Road on left comes in from **Moreno ranch** (5 miles); Cerro Colorado mine is about 1 mile north of road at foot of Cerro Colorado Mountains.

22.6 **Moyza Well.** Reverse fork. Follow northeastward down valley of Arivaca Creek. Road from Arivaca by way of **Arivaca ranch** and **Papalote Well** comes in on right.

29.6 Fork. Take right-hand road and cross over to south side of creek. Left-hand road follows north side and is about the same distance, but south side was preferred in 1917.

33.6 Amado. Reach the main Tucson-Nogales road at mile 40.1 from Tucson and mile 29.1 from Nogales.

NOGALES-ARIVACA ROAD.

NOGALES TO ARIVACA (43.5 MILES).

[See p. 360 for log in opposite direction.]

This road leaves the Tucson-Nogales road just north of a bridge across Potrero Creek. It is maintained in passable condition for motor trucks as far as the Montana mine, when the mine is being worked. The heavy trucks, however, make the going rough, though the road is easily followed. It has long but not excessive grades. Impassable in 1921.

0.0 **Nogales.** See page 354 for detailed log of next 6.4 miles.

6.4 Turn to left off main road and go upgrade onto gravelly plateau.

9.0 Go down into valley and follow it.

12.9 **Clark Well** on right; **good water.**

13.8 Turn southwest out of valley over ridge and into another valley.

19.5 Turn sharp curve around end of Atascosa Ridge; water hole 50 feet south of road; **water probably not permanent.**

20.0 Represo 200 yards south of road; **water not permanent.** The Marmee mine is about 1 mile south of the road.

20.3 Seep on north side of road.

20.2 Crest of pass. The road now goes northwest into Bear Valley.

23.2 Faint road goes half a mile to left to **Bear Valley ranch; water.**

31.2 **Montana mine. Water supply when mine is operating** from three dug wells and two large reservoirs. Store and gasoline.

32.2 **Jenkins ranch; well,** store, gasoline.

33.0 Small spring in gulch.

33.2 Small spring on left of road.

33.7 **Well** on right of road.

33.8 **Austerlitz.** House and **well,** mining claim. From this place a rough road runs south to Warsaw (4 miles).

34.3 Partridge.

36.0 **Oro Blanco.** Post office, **several wells.**

42.5 Reverse fork. Turn north across Arivaca Creek. Road on left comes from **Tully Well** (11 miles) and **Jarilla Spring** (4 miles). From Jarilla Spring the road goes south into Mexico.

43.5 **Arivaca.** Post office, **water supply,** hotel, store, gasoline. From Arivaca go west to Altar Valley, following log given on page 358.

ARIVACA TO NOGALES (43.5 MILES).

[See p. 359 for log in opposite direction.]

0.0 **Arivaca.** From post office go west.
0.1 Turn south through lane and cross Arivaca Creek.
1.0 Fork. Turn to left; right-hand road goes to **Tully Well** (11 miles) and **Jarilla Spring** (4 miles). From Jarilla Spring a road goes south to Mexico.
7.5 **Oro Blanco.** Post office, **several wells.**
9.2 Partridge.
9.7 **Austerlitz.** House and **well,** mining claim. From this place a rough road runs south to Warsaw (4 miles).
9.8 **Well,** left of road.
10.3 Small spring, right of road.
10.5 Small spring in gulch.
11.3 **Jenkins ranch. Well,** store, gasoline.
12.3 **Montana mine. Water supply when mine is operating** from three dug wells and two large reservoirs; store and gasoline. Go over ridge on well-graded road into Bear Valley.
20.3 Faint road on right leads half a mile to **Bear Valley ranch; water.**
23.3 Crest of pass at south end of Atascosa Ridge.
23.4 Seep on north side of road.
23.5 Represo, 200 yards south of road; **water not permanent.** The Marmee mine is about 1 mile south of the road.
24.0 Turn sharply to the left and go northeast. Water hole 50 feet south of road; **water probably not permanent.**
29.7 Go down valley.
30.6 **Clark Well** on left; **good water.**
34.5 Turn out of valley to right and go along gravel plateau.
37.1 Reverse fork. Come into Tucson-Nogales road. Go south and follow detailed log on page 353.
43.5 **Nogales.**

FIGUEROA RANCH TO BUENOS AIRES AND POINTS ON THE EAST SIDE OF ALTAR VALLEY.

From Figueroa ranch, near the junction of Arivaca and San Luis creeks, subsidiary roads go to various small ranches on the east side of Altar Valley. The roads are little traveled and have many steep but short grades. Many new fences will probably be built in the next few years and the details of the roads modified accordingly.

0.0 Figueroa ranch. **No well here. Water in emergencies only.** Go west into valley.
0.6 Fork. Same as mile 28.7 of Arivaca road. (See p. 358.) Take left turn up San Luis Valley. Right turn goes to Ronstadt gate. (See p. 356.)
1.6 Turn to left out of valley. A faint road leads up the valley to San Luis ranch and Jarilla Spring. It is not known whether this can be traveled by automobile.
4.3 Reverse fork. Road comes in on left from San Luis ranch (1.3 miles).
5.4 **Aguajita.** Well and windmill in clump of cottonwoods.
5.6 Fork. Keep to left.
6.5 Reverse fork.
6.7 **E. Garcia Well.** This is a stock-watering place. Continue west through gate in east-west fence.

6.9 Fork. Keep to right.

8.0 **Buenos Aires Well,** a stock-watering place. Water from the well and from **Aguirre Lake** is used. West of this place 1 mile is the Tucson-Sasabe road. (For log see p. 355.) Go southeast from Buenos Aires to reach the watering places along the east side of the valley.

10.4 Reverse fork. Road from **Sasabe** comes in on right. Travelers to Sasabe should, however, not use this road because of fences. The main route south from Ronstadt gate is preferable.

10.9 **Lopez ranch.** Well. From this ranch a road goes southeast 3 miles to **Canoa ranch** and 4 miles south to **M. Garcia ranch** and well. From the latter place it is 5.4 miles by a very bad road to **Sasabe.**

TUSCON-PHOENIX HIGHWAY.

A good automobile road between Tucson, the largest town in Arizona, and Phoenix, the State capital, has been the aim of road enthusiasts for a number of years. The road described in the following log follows the route most likely to be permanently improved. The present improvements are as follows: Beginning at Tucson, 40 miles of well-graded gravel road, with bridges and concrete dips; 27 miles of good desert road, brush cleared, and some work done with scraper; 1 mile of graded dirt road just south of Florence; 30 miles of desert road, brush cleared, and some work done with scraper between Florence and Higley; 15 miles of graded dirt road from Chandler to Mesa; 20 miles of paved road between Mesa and Phoenix.

TUCSON TO PHOENIX (131.3 MILES).

[See pp. 363–365 for log in opposite direction.]

0.0 **Tucson.** (For other roads from Tucson see pp. 334–355.) Go north on Stone Avenue.

0.1 Turn to left (west) on Congress Street.

0.5 Turn to right (north) on Main Street.

1.1 Cross Southern Pacific Railroad.

1.4 Fork. Continue north, avoiding crossroads. Road on left goes along railroad to Casa Grande and Maricopa. (See p. 366.)

5.5 Bridge over Rillito Creek.

13.3 Store, **water,** gasoline.

14.7 Cross Gold Canyon Creek.

24.7 **Walnut Well.**

24.9 Fork. Take left-hand road. Right-hand road goes to Oracle (12 miles) and Winkelman (50 miles).

27.9 Fork. Keep to left.

31.9 Fork. Keep to right.

34.3 Small hill on left.

39.1 **Simmons Well. Good water.**

41.7 Fork. Keep to left. Road on right goes to Durham ranch.

43.2 Crossroads. Go straight ahead. Road on right to Davis ranch. Road on left to **Red Rock.** (See p. 367.)

44.1 Fork. Keep to right. **Meneger ranch and well** one-quarter of a mile to left. **No water for 23 miles.**

45.1 Reverse fork. Road comes in on right from Foreman ranch.

46.5 Small hill on right.

47.0 Small hill on right.

47.6 Avoid numerous forks for next 6 miles and follow cleared and partly graded roadway.
66.7 Double reverse fork on south side of canal. **Water usually** in the canal.
66.8 Reverse fork. Road from Casa Grande (30 miles) comes in on left.
67.2 Reverse fork. Road from Casa Grande Ruins (9.2 miles) comes in on left. (See p. 365.)
68.3 **Florence.** Post office, **water supply,** stores, automobile supplies and repairs, gasoline. Go north and cross Gila River by concrete bridge.
70.8 Florence railroad station. Turn to left (west).
70.9 Fork. Take road on left and go under southern base of lava-capped Poston Butte.
72.6 Avoid roads going southwest into valley and turn northwest onto gravel bench.
75.9 Fork. Keep to right.
77.1 Fork. Keep to left. Lava-capped butte southwest and another northwest.
78.6 Crossroads. Keep straight ahead with mountains on left.
84.7 Turn to left around point of low hills projecting from the mountains.
86.3 Fork. Keep to left. Road on right goes to ranch a quarter of a mile from road.
92.7 Turn west along base of mountains, on east-west road.
94.0 Turn north at base of steep hills at northern foot of Santan Mountains.
94.2 Fork. Avoid road on left.
94.7 **Wells** on each side of road.
95.3 Fork. Keep straight on. Road on left cuts across desert to **Chandler,** from which it is 8.2 miles to **Mesa.**
95.9 Crossroads. Continue north.
97.7 **Well** on right.
99.2 **Well** on left.
99.8 Crossroads. Continue straight on.
100.8 **Higley.** Store, **well,** crossroads. Turn to left (west).
103.3 Cross ditch into irrigated district. From this point on into Phoenix **wells are very numerous** and water is so easy to obtain that individual wells are not mentioned.
103.7 Crossroads. Continue straight on.
104.7 Crossroads. Continue straight on.
105.7 Crossroads and power line. Continue straight on.
106.7 Crossroads. Continue straight on.
107.7 Crossroads. Turn north along power line. **Chandler, water supply,** stores, gasoline, lies a quarter of a mile south.
108.7 Crossroads. Continue straight on (north).
109.7 Crossroads. Continue straight on (north).
110.7 Crossroads. Continue straight on (north).
111.7 Crossroads. Continue straight on (north).
112.7 Turn east. The road west is the Base Line road to Phoenix (18.3 miles).
112.9 Turn north along power line.
113.4 Road on left.
113.9 Crossroads. Continue north.
114.4 Road on left.
114.9 Crossroads. Continue north across railroad.
115.4 Crossroads. Turn to left (west) on paved road. **Mesa,** a quarter of a mile east, is pleasant town. **Water supply,** hotel, stores, garage, gasoline.
115.9 Crossroads.

116.4 Crossroads.
117.4 Crossroads.
118.4 Crossroads.
119.4 Turn to right (north).
119.7 Turn to left (west).
120.1 Pacific Creamery on right, thence on main road into town of Tempe.
121.6 **Tempe. Water supply,** stores, garage, gasoline. Turn north on Main Street.
122.1 Turn west toward railroad and thence north across Salt River over concrete bridge and then turn westward through gravelly hills.
125.7 Cross canal and go west into Phoenix on bitumen-bound macadam road.
130.5 Turn south in outskirts of Phoenix to Adams Street.
130.8 Go west on Adams Street.
131.3 **Phoenix. Water supply,** hotels, stores, garages, etc. (For roads into the Papago country from Phoenix see pp. 381–385.)

PHOENIX TO TUCSON (131.3 MILES).

[See pp. 361–363 for log in opposite direction.]

0.0 **Phoenix.** Go east on Adams Street.
0.5 Turn to left (north) into Monroe Street.
0.8 Turn to right (east) on Monroe Street and go east on bitumen-bound macadam road.
5.6 Cross canal and follow paved road through gravelly hills; then turn south to concrete bridge over Salt River; turn to left (east) at end of bridge.
9.2 **Tempe, water supply,** stores, garage, gasoline. Turn to right (south) on Main Street.
10.7 Turn to left (east).
11.2 Pacific Creamery on left.
11.6 Turn to right (south).
11.9 Turn to left (east).
12.9 Crossroads.
13.9 Crossroads.
14.9 Crossroads.
15.5 Crossroads.
15.9 Crossroads. Turn to right (south) and follow along power line. Road east goes one-quarter of a mile to **Mesa, water supply,** hotel, stores, garage, gasoline, and thence to Roosevelt Dam and Globe.
16.4 Cross railroad and then crossroad. Continue south.
16.9 Road on right.
17.4 Crossroads. Continue south.
17.9 Road on right.
18.4 Turn to right (west).
18.6 Turn to left (east).
19.6 Crossroads.
20.6 Crossroads.
21.6 Crossroads.
22.6 Crossroads.
23.6 Crossroads. Turn to left (east). **Chandler, water supply,** stores, gasoline, lies one-quarter of a mile south.
24.6 Crossroads. Continue east.

25.6 Crossroads. Continue east.
26.6 Crossroads. Continue east.
27.6 Crossroads. Continue east.
28.0 Cross ditch out of irrigated district. From this point on to Florence **wells are far apart.**
30.5 **Higley.** Store, **well.** Crossroads. Turn to right (south).
31.5 Crossroads. Continue south.
32.1 **Well** on right.
33.6 **Well** on left.
35.4 Crossroads. Continue south.
36.0 Reverse fork. Cut-off road comes in across desert from Chandler.
36.6 **Wells** on each side of road.
37.1 Reverse fork.
37.3 Turn to left (east) at base of steep hills at foot of Santan Mountains.
38.6 Turn southeast.
45.0 Reverse fork. Road comes in on left from ranch a quarter of a mile off road.
46.6 Turn to right (southeast) around point of low hills projecting from the mountains.
52.7 Crossroads. Continue southeast.
53.4 Reverse fork. Road comes in on left. Lava-capped butte southwest and another northeast.
55.4 Reverse fork. Road comes in on right.
58.7 Turn east in valley of Gila River toward Poston Butte, avoiding roads on right, which go into river bottom.
60.4 Reverse fork. Road comes in on right; Poston Butte on left (north).
60.5 Florence railroad station. Turn to right over concrete bridge and cross Gila River.
63.0 **Florence.** Post office, **water supply,** stores, automobile supplies and repairs, gasoline. Go south.
64.1 Fork. Keep to left. Road on right goes to Casa Grande Ruins (9.2 miles).
64.5 Fork. Keep to left across canal. Road on right on north side of canal goes to Casa Grande (30 miles).
64.6 Double fork on south side of canal. Take center road southeast across plain over fair desert road, cleared and partially graded. Avoid numerous forks. **No water until Meneger's ranch is reached (23 miles).**
84.3 Small hill on left.
84.8 Small hill on right.
86.2 Fork. Keep to right. Road on left goes to Foreman's ranch.
87.2 Fork. Keep to left. **Meneger's ranch and well** a quarter of a mile on right; 5 miles to next water.
88.1 Crossroads. Road straight ahead. Road on left to Davis ranch. Road on right to Red Rock.
89.6 Reverse fork. Road comes in on right from Durham ranch.
92.2 **Simmons Well. Good water.**
97.0 Small hill on right.
99.4 Reverse fork.
103.4 Reverse fork.
106.4 Reverse fork. Oracle road comes in on left. Go south.
106.6 **Walnut Well.**

116.6 Cross Gold Canyon Creek.
118.0 Store. **Water,** gasoline.
125.8 Bridge over Rillito Creek. Go south, avoiding crossroads.
130.2 Cross Southern Pacific Railroad tracks and continue south on Main Street.
130.8 Turn to left (east) on Congress Street.
131.2 Turn to right.
131.3 **Tucson.** Post office, **water supply,** hotels, garages, etc. (For other roads out of Tucson see pp. 334, 352, 353, 366.)

CASA GRANDE RUINS ROAD.

FLORENCE TO CASA GRANDE RUINS (9.7 MILES).

[See below for log in opposite direction.]

0.0 **Florence.** (For other roads from Florence see pp. 362, 369.) Go south on Main Street.
0.5 Fork. Turn to right on soft dirt road. Road straight ahead is Phoenix–Tucson Highway. (See p. 364.)
2.1 Old Fraser ranch on right, with grove of mesquite trees
2.9 Road on left.
3.8 **Clements ranch** on right; well and pumping plant. This is the site of the abandoned town of Adamsville.
6.7 Road on right.
7.0 Crossroads. Keep straight on.
7.2 Reverse fork. Road comes in on left.
7.8 Follow on south side of wire fence.
8.6 Fork. Wooden sign. Take left-hand road.
9.6 Crossroads. Turn to left and pass between well and ruins.
9.7 **Casa Grande Ruins.** Caretaker in charge who will assist travelers. **Good well and water supply.** From Casa Grande Ruins one can go south 1.5 miles and strike the Casa Grande–Florence road 18.4 miles from Casa Grande and 12.6 miles from Florence. (See log on p. 369.)

CASA GRANDE RUINS TO FLORENCE (9.7 MILES).

[See above for log in opposite direction.]

0.0 **Casa Grande Ruins.** Go north between ruins and well. The ruins are 1.5 miles north of the Casa Grande-Florence road. (See log, p. 369.)
0.1 Crossroads. Turn to right.
1.1 Reverse fork. Go east on south side of fence.
2.5 Fork. Keep to left.
2.7 Crossroads. Keep straight on.
3.0 Road comes in on left.
5.9 **Clements ranch** on left; well and pumping plant. This is the site of the abandoned town of Adamsville.
6.8 Road comes in on right.
7.6 Old Fraser ranch on left, with grove of mesquite trees.
9.2 Reverse fork. Turn to left on well-graded road and go north into town.
9.7 **Florence.** For other roads from Florence, see pages 362, 369.

TUCSON-CASA GRANDE ROAD.

TUCSON TO CASA GRANDE (66.8 MILES).

[See below for log in opposite direction.]

This road parallels the Southern Pacific Railroad and thus follows the flats of Santa Cruz River. In dry weather it is generally smooth and easy to travel. In wet weather it is impassable on account of mud. By continuing along the railroad from Casa Grande to Maricopa (see log on p. 368), from Maricopa to Gila Bend (see log on p. 375), from Gila Bend to Sentinel (see log on p. 385), and thence along the Tucson-Yuma road (see log on p. 339), it is possible to reach Yuma from Tucson. This route is feasible only in dry weather and has no advantages over the Tucson-Yuma road by way of Ajo.

0.0 **Tucson.** (For other roads out of Tucson see pp. 334, 352, 353, 361.) Go north on Stone Avenue.
0.1 Turn to left (west) on Congress Street.
0.5 Turn to right (north) on Main Street.
1.1 Cross Southern Pacific Railroad.
1.4. Fork. Turn to left (northwest) and follow along but at some distance from the railroad.
7.9 **Jaynes.** Station and **well** on railroad. The road from this point parallels the railroad closely.
15.4 **Weaver Well** on west side of track.
17.6 **Rillito.** Railroad station and **well.**
23.1 **Wakefield ranch.** Cross railroad to southwest side and go northwest.
26.9 Naviska. A siding on the railroad.
33.2 Cross Arizona Southern Railroad, which goes southwest to **Silver Bell.** Road from **Silver Bell** comes in on left. (See p. 367.)
33.7 **Red Rock.** Post office, **water,** store, gasoline. Cross railroad and go northwest on northeast side of track. For other roads from Red Rock see page 367.
38.1 Wymola, railroad siding. Cross to southwest side of track. Picacho Peaks on left. At the north end of the peaks lie **Blue Water Tanks,** at one time the only watering place in these plains.
48.1 **Picacho. Water,** store; cross to northwest side of track and go northwest. In dry weather the road along the track can be traveled. At times there is a mudhole near McEloy and the detour by way of the **Davis ranch** as shown on map should be taken. This is about 3.3 miles longer. A road goes northeast from Picacho to Avenenti ranch (11 miles) and one goes southeast to Green's reservoir (13.5 miles) and Jackrabbit (24 miles).
53.1 McEloy, railroad siding.
58.1 Toltec. Station and railroad **well** from which water can be obtained.
62.1 Arizola, railroad station.
66.8 **Casa Grande.** Post office, **water supply,** stores, automobile supplies, repairs, and gasoline. (For other roads from Casa Grande see p. 368.)

CASA GRANDE TO TUCSON (66.8 MILES).

[See above for log in opposite direction.]

0.0 **Casa Grande.** (For other roads from Casa Grande, see p. 368.) Go southeast past railroad water tank and keep on northeast side of railroad track.
4.7 Arizola, railroad station.

10.7 Toltec. Station and railroad **well** from which water can be obtained. In dry weather the road along the track can be traveled, but at times there is a mudhole near McEloy and the detour by way of the **Davis ranch**, as shown on the map, should be taken. This is about 3.3 miles longer.

13.7 McEloy, railroad siding.

20.7 **Picacho. Water,** store. Cross to southeast side of track and go south east. A road goes northeast from Picacho to Avenenti ranch (11 miles) and one goes southeast to Green's reservoir (13.5 miles) and Jackrabbit (24 miles).

28.7 Wymola, railroad siding. Cross to northeast side of track and go southeast.

33.1 **Red Rock.** Cross to southeast side of track and go southeast. Post office, **water,** store, and gasoline. (For other roads out of Red Rock see below.)

33.6 Fork. Keep to left and cross track of Arizona Southern Railroad, which goes southwest to **Silver Bell.** Road to **Silver Bell** on right.

39.9 Naviska, railroad siding.

43.7 **Wakefield ranch.** Cross railroad to northeast side and go southeast.

49.2 **Rillito,** railroad station and **well.** From this point into Tucson there are ranches along the Santa Cruz.

51.4 **Weaver Well** on west side of track.

59.9 **Jaynes.** Railroad station and **well.** The road from this point swings away from the railroad but parallels it.

65.4 Reverse fork in outskirts of town. Turn into Main Street and go south.

65.7 Cross Southern Pacific Railroad tracks and continue south.

66.3 Turn to left (east) on Congress Street.

66.7 Turn to right (south) on Stone Avenue.

66.8 **Tucson.** Post office, etc. (For other roads out of Tucson see pp. 334, 352, 353, 361.)

ROADS OUT OF RED ROCK.

Red Rock is the supply point for cattle ranches to the east and for settlers along the Santa Cruz flats in the vicinity.

At least two roads go east. The northerly one crosses the Tortolito Mountains to Plummer's ranch, 12.5 miles, and crosses the Tucson-Phoenix Highway, 16.5 miles from Red Rock. The more southerly road goes southeast across the Tortolito Mountains for 16.5 miles and then turns southeast to a well 20 miles from Red Rock and reaches the Phoenix-Tucson Highway in the Canada del Oro by way of Lockas's ranch and Pusch's ranch, a total distance of 30 miles.

Southwest from Red Rock a road goes along the north side of the track of the Arizona Southern Railroad. It reaches Sasco, where a smelter is located 6.5 miles away, but the details of the road are not known and are not shown on the map (Pl. XXV). Five miles from Red Rock, however, this road forks. The right-hand road goes through some fields and along the bank of Santa Cruz River to Green's canal and follows the canal to Green's reservoir. The left-hand road goes west for 2 miles and forks again. The right-hand road goes by way of the Sasco mine to Green's canal and thence to the reservoir. The left-hand road goes southwest through some hills to Silver Bell. There are numerous crossroads and forks, but if the traveler will keep the railroad on his left and follow the main traveled road, he will have no difficulty. The distance from Red Rock to Silver Bell is about 20 miles.

ROADS OUT OF CASA GRANDE.

CASA GRANDE TO MARICOPA (20.4 MILES).

[See below for log in opposite direction.]

The road from Casa Grande to Maricopa is like that from Casa Grande to Tucson, open only in dry weather. It follows the flats of Santa Cruz River and is very muddy when wet. (For other roads from Casa Grande see pp. 366–367.)

0.0 **Casa Grande.** Cross to southwest side of track and follow railroad northwest.
10.5 Bon, railroad siding.
15.5 Nunez, railroad siding.
17.2 Cross to northeast side of track and go north.
17.5 Fork. Take left-hand road and go northwest toward railroad water tank at Maricopa, plainly visible. The right-hand road goes 8.3 miles to Casa Blanca, an Indian village on Gila River.
20.4 **Maricopa.** Post office, **water,** store, gasoline. (For other roads out of Maricopa see pages 375–381.)

MARICOPA TO CASA GRANDE (20.4 MILES).

[See above for log in opposite direction.]

0.0 Maricopa. (For other roads out of this town see pages 375–381.) Go east from post office across plain at a distance of a quarter to half a mile from the railroad.
2.9 Reverse fork. Turn south. Road comes in on left (north) from Casa Blanca (8.3 miles), an Indian village on Gila River.
3.2 Cross railroad and go southeast on southwest side of track.
4.9 Nunez, railroad siding.
9.9 Bon, railroad siding.
20.4 **Casa Grande.** Post office, **water supply,** hotel, automobile supplies and repairs. (For other roads from Casa Grande see pages 366–367.)

PHOENIX TO CASA GRANDE BY WAY OF SACATON (58 MILES).

[See p. 369 for log in opposite direction.]

0.0 **Phoenix.** (For other roads from Phoenix see pp. 363, 376, 381–385.) Go east on Phoenix-Tucson Highway (see log on p. 363) to crossroads, 2 miles east of **Chandler.**
25.6 Crossroads. Turn to right (south) and follow power line. Road straight ahead (east) is Phoenix-Tucson Highway.
35.2 Turn to left (southeast). Numerous roads. Keep north of canal toward south end of hill near Gila River.
41.6 Santan. Pima village. Turn to right (south) between fences across ford of Gila River toward Indian agency buildings, plainly visible. This ford should not be attempted when the river is in flood.
44.3 **Sacaton. Wells.** Indian agency. Turn to right around buildings and church and then to left. Go south on graded road up alluvial slope toward Sacaton Mountains.
49.2 Go through pass between detached rocky hills which form the Sacaton Mountains and south over fair plains road.

54.7 Cross bed of Santa Cruz River. There are wooden culverts which usually are in poor condition after rains or a flood on the river; this crossing is difficult and local advice should be sought. Continue south.

58.0 **Casa Grande.** For other roads out of this town see pages 366–367, 368–375.

CASA GRANDE TO PHOENIX BY WAY OF SACATON (58 MILES).

[See p. 368 for log in opposite direction.]

0.0 **Casa Grande.** Go northeast and then northwest to outskirts of town.

0.3 Go north on graded road.

3.3 Cross channel of Santa Cruz River. There are wooden culverts which are usually in poor condition after rains or a flood on the river; this crossing is difficult, and local advice should be sought. Continue north up alluvial slope over fair plains road.

8.8 Go through pass between detached rocky hills which form the Sacaton Mountains and then down alluvial slope over graded road.

13.7 **Sacaton. Wells**; Indian agency. Follow main traveled road north between fences across ford of Gila River. This ford should not be attempted when the river is in flood. Local advice should be sought.

16.4 Santan. Pima village on north bank of Gila River. Turn to left (northwest) on north side of canal. There are numberless roads; keep to the northwest toward power line visible in the distance.

22.8 Turn north along power line and avoid crossroads.

32.4 Come into east–west road. Turn west.

33.4 Crossroads.

33.9 Crossroads.

34.4 Crossroads. Turn north along power line and follow Tucson-Phoenix Highway. (See log on p. 362.) **Chandler, water,** stores, and gasoline, is a quarter of a mile south.

58.0 **Phoenix.** For other roads from Phoenix see pages 363, 376, 381–385.

CASA GRANDE TO FLORENCE (31 MILES).

[See p. 370 for log in opposite direction.]

This is a county road largely along section lines. It is well graded on soft alluvium. In wet weather it is very muddy and in dry weather dusty and full of chuck holes. There are many farms along this road, at each of which there is a well. Only a few of these are recorded in the log. (For other roads from Casa Grande see pp. 366–367, 368–375.)

0.0 **Casa Grande.** Go southeast from post office and turn east near railroad water tank to outskirts of town.

0.3 Beginning of county road going east along section line.

5.0 House and **well** north of road.

9.7 House and **well** north of road.

10.6 Turn to left (north), avoiding road straight ahead.

14.9 Turn to right (east).

15.4 Turn to left (north), avoiding road straight ahead.

17.4 Turn to right (east). Road straight ahead goes 1 mile north and 1.5 miles east to Casa Grande Ruins.

18.4 Crossroads. Continue east. Road on left goes north to Casa Grande Ruins (1.5 miles). From this place it is 9.7 miles from Florence. (See log on p. 365.) It is thus 1.4 miles shorter to go east to Florence by the ruins and frequently the road is better.

19.9 House and **well** on right.
20.4 House and **well** on left.
20.9 House and **well** on left.
21.4 Road goes off to north.
21.5 Schoolhouse on left (north).
22.1 House and **well** on right.
22.3 Road goes off to north.
22.7 House and **well** on left.
23.3 Crossroads. Continue east.
24.3 Turn to left (north), avoiding road straight ahead.
24.7 **Well** on right (east).
25.3 Road on right.
26.3 Crossroads. Turn to right (east). House and **well** on southwest corner.
28.2 Turn slightly to left and go northeast along canal.
30.0 Reverse fork. Turn north on Tucson-Phoenix Highway.
30.5 Reverse fork. Casa Grande Ruins road comes in on left. (See p. 365.)
31.0 **Florence.** Post office. (For other roads out of Florence see pp. 361–365.)

FLORENCE TO CASA GRANDE (31 MILES).

[See p. 369 for log in opposite direction.]

0.0 **Florence.** (For other roads from Florence see pp. 361–365.) Go south on Main Street.
0.5 Fork. Continue south. Road to right is Florence–Casa Grande Ruins road. This road rejoins the Florence–Casa Grande road 12.6 miles west of Florence. It is 1.4 miles shorter to Casa Grande by the Ruins road and frequently it is an easier trip.
1.0 Fork on north side of canal. Turn to right (southwest) and follow along canal. Left-hand road is the Tucson-Phoenix Highway.
2.8 Turn to right (west) away from canal.
4.7 Crossroads. Turn to left (south). House and **well** on southwest corner.
5.7 Road on left.
6.3 **Well** on left (east).
6.7 Turn to right (west), avoiding road to left (east).
7.7 Crossroads. Continue west.
8.3 House and **well** on right.
8.7 Road goes off to north.
8.9 House and **well** on left.
9.5 School house on right (north).
9.6 Road goes off to north.
10.1 House and **well** on right.
10.6 House and **well** on right.
11.1 House and **well** on right.
12.6 Crossroads. Continue west. Road on right comes in from **Casa Grande Ruins** (1.5 miles). This place is 9.7 miles from Florence. (See log on p. 365.)
13.6 Turn to left (south). Road on right goes north 1 mile and then east 1.5 miles to **Casa Grande Ruins.**
15.6 Turn to right (west), avoiding road on left (east).
16.1 Turn to left (south).
20.4 Turn to right (west), avoiding road on left (east).
21.3 House and **well** north of road.
26.0 House and **well** north of road.

30.7 Turn to left (southwest) on street to railroad water tank and then to right on Main Street.

31.0 **Casa Grande.** For other roads from Casa Grande see pages 366–375.

CASA GRANDE TO POZO SAN LUIS, SONORA, BY WAY OF JACKRABBIT AND THE SANTA ROSA VALLEY (102 MILES).

[See pp. 373–374 for log in opposite direction.]

0.0 **Casa Grande. Water supply,** post office, hotels, supplies, automobile supplies and repairs. (For other roads from Casa Grande see pp. 366–375.) Cross railroad tracks and turn south by small concrete jail. The road has been graded for next 10 miles; travelers should use their judgment as to whether to follow on or beside grade.

8.5 **Chiu-Chuschu.** Winter ranchería, **United States Indian Service well, good water.** There are two routes to Jackrabbit; the usual route with easiest grades goes to the east of the Silver Reef Mountains by way of Ko-opke; the other goes to the west of the mountains by way of the Silver Reef mine. A road also leads west 9 miles to Cocklebur, winter ranchería and well.

11.0 **Ko-opke. Well** and a few houses by large fields on the left, mountains on the right.

13.4 Fork. Keep to right; a road on left goes to **Armenta ranch and well** (1 mile).

20.5 Reverse fork. The road from Chiu-Chuschu by way of Silver Reef mine comes in on right.

21.9 Fork. Keep to left; road on right goes north of hill to Orizaba mine (1.3 miles).

22.4 Fork. Keep to right; road on left goes 1.4 miles to **United States Indian Service well,** at Jackrabbit; Government employees and Indians dependent on this well for water form a new village which is replacing the old village of Taht Mahmeli.

22.7 Fork. Keep to left; road to right goes to Orizaba mine.

23.0 Jackrabbit mine, on hill south of road at north end of Slate Mountains. This mine once employed a large number of workmen. There are numerous prospects in the neighborhood, and doubtless many more roads and watering places than are shown on the map. From the mine go southwest along the hills.

24.0 Turning Point mine. To go to Santa Rosa Valley turn to left around point of hill, keeping Slate Mountains on left. A road comes in on right from Orizaba mine (1.7 miles) and from **Cocklebur** (9 miles). A road goes west (6 miles) to **Quajote,** a ranchería with extensive temporales and a **United States Indian Service well.** From Quajote a road goes north of Vekol Mountains 4 miles to **Reward mine,** where there are **two wells,** and thence 4 miles to **Bitter Wells,** winter ranchería, where there is a **well.** From the latter place it is 2.5 miles to Vekol. From Quajote a road also goes south of Vekol Mountains 10 miles to **Copperosity,** a winter ranchería with **2 wells,** and thence to **Isabella mine,** 7 miles farther.

31.3 Beginning of village; temporales on left. Road comes in on right from **Quajote** (5 miles).

32.0 **Kukomalik.** Winter ranchería; **United States Indian Service well** on right. Continue south.

39.0 Crossroads. Turn to right toward center of valley.

44.5 **Anegam.** Ranchería; **United States Indian Service well** on bank of main arroyo of the valley, 1.5 miles east of the village. On account of this well there is now permanent water, and people will be found here at all seasons of the year. Go south between represos.

46.5 **Santa Rosa.** Summer ranchería; **United States Indian Service well** on west bank of main arroyo of valley, half a mile east of village. On account of this well there is now permanent water, and people will be found here at all seasons of the year.

47.0 Fork. Keep to right due south in center of Santa Rosa Valley; road to left goes southeast through summer ranchería of Akchin; 19 miles to **Cobabi.** As Santa Rosa is one of the oldest and most important Papago settlements there are doubtless many other roads not shown on the map.

60.0 Reverse fork. Road from Covered Wells comes in on right. This is part of Pozo Blanco route of Tucson-Yuma road. (See p. 345.) It is possible to go to **Horseshoe** (Quijotoa post office), where there is a **well** and store, by taking this road and turning to the left about 3 miles out; the total distance is 5.5 miles. Horseshoe is the center of present mining activity in the Quijotoa Mountains, and roads lead to all the principal mines and prospects. These roads are not shown on the map.

61.0 Sikulhimakt, represo and some houses. Keep straight on south. A road goes southeast to **Cobabi.** This is part of the Pozo Blanco route of the Tucson-Yuma road. (See p. 345.) A road goes west to **Horseshoe** (5.5 miles).

67.0 Kvitatk. Summer ranchería; **no permanent water.** This is the more eastern of two rancherías near the abandoned well and ruined pumping plant of the old Weldon mine. The western ranchería is called, in Papago, "Vainomkux," which is translated roughly as "Iron Pipe." The whole locality is sometimes called "Pumphouse." From each ranchería there is a road to **San Antone,** winter ranchería, with three **wells,** on the site of the abandoned mining camp of Quijotoa. This place lies at the foot of the mountains between South Mountain and Ben Nevis Mountain. The **Weldon mine,** now abandoned, lies 2.5 miles up the canyon, and from the **wells** near by, roads lead over the mountain to **Black Butte,** winter ranchería and **well.** The condition of these roads is not known. Quijotoa mine, on the north side of Ben Nevis, is 5 miles from Kvitatk. The road goes through Iron Pipe and branches from the San Antone road 2 miles out of that village. A road also goes east 5.5 miles to **Nolic,** winter ranchería with **wells,** which lies just southeast of Cobabi Mountains, a small group of reddish, rugged mountains. Another road goes southeast 14 miles to Indian Oasis. (See p. 393.)

To continue to Tecolote go south from Kvitatk, avoiding the many forks and crossroads, and cross a low drainage divide. South of this divide the road stays on the east of the main arroyo of the valley, which gradually swings west to round the point of South Mountain.

76.5 Cross main Tucson-Yuma road about three-fourths of a mile west of the Geological Survey sign at Big Fields. As this crossroad was not seen in traveling from Big Fields to Copeka it is likely that this part of the road is little used, and travelers leaving Kvitatk will probably land at Big Fields. In this event they should go to the south side of Big Fields and take the Indian Oasis-Menegers Dam road (see p. 394) until they come into this road at mile 78.5.

78.5 Crossroads. Continue south. This is Indian Oasis-Menegers Dam road. (See p. 394.)

79.3 Crossroads. Continue south. This is Copeka-Kavolik road. (See p. 396.)

87.0 Tecolote. Summer ranchería; large represo in which there is water for several months after a rain; **no permanent water.** Tecolote is the center of a maze of roads, of which the principal one is the Indian Oasis-Kavolik-Tecolote route into Mexico (see p. 392); others are from and to the various near-by temporales and summer rancherías. Go south on west side of represo.

90.8 Crossroads. Continue south.

92.3 Pass temporal and houses on left; avoid numerous forks and continue south.

94.3 International boundary monument 151 about a mile to the left (east). Go south into cove between La Lesna and Cobota mountains.

94.6 Reverse fork. Road from La Lesna Mountains comes in on right.

99.0 Cobota ranchería.

102.0 **Pozo San Luis.** Winter ranchería; **well and permanent water.** From Pozo San Luis roads lead to all the principal points in Sonora.

POZO SAN LUIS, SONORA, TO CASA GRANDE BY WAY OF SANTA ROSA VALLEY AND JACKRABBIT (102 MILES).

[See pp. 371–373 for log in opposite direction.]

0.0 **Pozo San Luis.** Winter ranchería; well and permanent water. Roads lead to this place from all the principal points in Sonora. Go northeast.

3.0 Cobota ranchería. Go north between La Lesna and Cobota mountains into open plain.

7.4 Fork. Keep to right. Road to left goes to north end of La Lesna Mountains.

7.7 International boundary monument 151 about a mile to the right (east). Go north, avoiding numerous forks.

9.7 Temporal and houses on right.

11.2 Crossroads. Continue north.

15.0 Tecolote. Summer ranchería; large represo in which there is **water for several months after a rain; no permanent water.** Tecolote is the center of a maze of roads, of which the principal one is the Indian Oasis-Kavolik-Tecolote route into Mexico (see p. 392); others are from and to the various near-by temporales and rancherías. Go north on west side of represo and east of corral, bearing to east of Quijotoa Mountains, visible across the plain.

22.7 Crossroads. Continue north. This is Copeka–Kavolik road. (See p. 396.)

23.5 Crossroads. Continue north; this is Indian Oasis–Menegers Dam road. (See p. 394.)

25.5 Crossroads. Tucson–Yuma road about three-quarters of a mile west of the Geological Survey sign at Big Fields. As this crossroad was not seen in traveling from Big Fields to Copeka, it is likely that this part of the road is little used, and travelers leaving Tecolote may land in Big Fields. In this event they will find a road leading from the represo on the north side of Big Fields and rejoining this road at Kvitatk.

35.0 Kvitatk. Summer ranchería; **no permanent water.** This is the more eastern of two rancherías near the abandoned well and ruined pumping plant of the old Weldon mine. The western ranchería is called, in Papago, "Vainomkux," which is translated roughly as "Iron Pipe." The whole locality is sometimes called "Pumphouse."

Avoid the numerous crossroads and forks and go north between the represos of Kvitatk on the west side of arroyo, which flows north. From this place to Anegam the road follows the center of Santa Rosa Valley; plains road, very muddy in wet weather. For roads out of Kvitatk see page 393.

41.0 Sikulhimakt, represo and some houses. Keep straight on north. (For roads out of this place see p. 345.)

42.0 Fork. Take left-hand road (north). (For right-hand road see p. 345.)

55.0 Reverse fork. (For road coming in on right see p. 372.)

55.5 **Santa Rosa.** Summer ranchería; **United States Indian Service well** on west bank of main arroyo of valley, half a mile east of village. On account of this well there is now permanent water and people will be found here at all seasons of the year. Avoiding forks and crossroads; go north.

57.5 **Anegam.** Summer ranchería; **United States Indian Service well** on bank of main arroyo of the valley, 1.5 miles east of the village. On account of this well there is now permanent water and people will be found here at all seasons of the year. Go north between represos and turn to right (northeast) along south bank of large arroyo.

63.0 Crossroads; turn to left (north).

70.0 **Kukomalik.** Winter ranchería; **United States Indian Service well** on left. Continue north through village with temporales on right.

70.7 End of village; road from Quajote (5 miles) comes in on left.

78.0 Turning Point mine at north end of Slate Mountains. Turn to right around point of the mountains. Various roads come in here. (See p. 371.)

79.0 Jackrabbit mine, on hill south of road. (See p. 371.)

79.3 Reverse fork. Road comes in on left from Orizaba mine.

79.3 Reverse fork. Road comes in on right from **United States Indian Service well** at Jackrabbit. Government employees and Indians dependent on this well for water form a new village which is replacing the old village of Taht Mahmeli.

80.1 Reverse fork. Road comes in on left from Orizaba mine (1.3 miles).

81.5 Fork. Keep to right; the road on left goes by way of Silver Reef mine and rejoins this road at Chiu-Chuschu. It is about the same length but has steeper grades.

88.6 Reverse fork. Road comes in from Armenta ranch.

91.0 **Ko-Opke. Well** and a few houses by large fields on right, mountains on the left.

93.5 **Chiu-Chuschu.** Winter ranchería; **United States Indian Service well,** good water. Go north through village on graded road. (For other roads see p. 375.)

102.0 **Casa Grande. Water supply,** post office, hotels, supplies, automobile supplies and repairs. (For other roads from Casa Grande see pp. 366–375.)

CASA GRANDE TO COCKLEBUR AND QUAJOTE (27.2 MILES).

[See below for log in opposite direction.]

This road was not traveled, and distances are given as measured on the map. (For other roads from Casa Grande see pp. 366–375.)

0.0 **Casa Grande.** Cross railroad tracks and go south on graded road.
2.0 Fork. Take right-hand road (southwest). The graded road continues south to **Chiu-Chuschu.** (See log on p. 371.)
11.0 **Well** and Indian huts.
15.5 **Cocklebur.** Winter ranchería; **two dug wells.** Continue south. Road from **Chiu-Chuschu** on left (p. 371) and from **Maricopa** on right (p. 380).
20.1 Fork. Take right-hand road southwest. Left-hand road goes southeast 3 miles to Orizaba mine and 6 miles to **Jackrabbit.** (See p. 371.)
26.1 Corner of temporal. Go west along border of field and then south.
27.2 **Quajote.** Winter ranchería; **United States Indian Service well.** From this village a road goes north of Vekol Mountains 4 miles to **Reward mine,** where there are two wells, and thence 4 miles to **Bitter Well,** winter ranchería, where there is a well. From **Quajote** a road also goes south of Vekol Mountains 10 miles to **Copperosity,** a winter ranchería with two wells, and thence to **Isabella mine,** 7 miles farther.

QUAJOTE TO COCKLEBUR AND CASA GRANDE (27.2 MILES).

[See above for log in opposite direction.]

0.0 **Quajote.** From the United States Indian Service well go north and turn east along northern border of temporal.
1.1 Turn northeast at corner of field.
6.1 Reverse fork. Road comes in on right from Orizaba mine (3 miles) and **Jackrabbit** (6 miles).
11.7 **Cocklebur.** Winter ranchería; **two dug wells.** Continue north and northeast.
16.2 **Well** and Indian huts.
25.2 Reverse fork. Turn north on graded road which comes in from **Chiu-Chuschu.** (See p. 371.)
27.2 **Casa Grande.** For other roads out of this town see pages 366–375.

ROADS OUT OF MARICOPA.

MARICOPA TO GILA BEND (44.1 MILES).

[See p. 376 for log in opposite direction.]

This road, except for the short interval between Heaton and the Geological Survey sign west of Enid, is made of parts of the Phoenix–Maricopa road by way of Gila Crossing and the Phoenix–Gila Bend road by way of Gila Crossing.

0.0 **Maricopa.** Cross railroad track and go west toward gap between Sierra Estrella and Palo Verde Mountains, avoiding road to left, which goes to **Akchin.** (See p. 377.) Much drifted sand and many adobe flats.
4.0 **Peblo Well. Good water.** Turn northwest toward railroad.
6.9 Heaton. Switch on railroad. No houses. Cross railroad and turn west over fair desert road. Road north goes to **Phoenix.** (See p. 377.)
11.8 Enid. **Water in emergencies** at section house. Continue west.

14.1 Reverse fork. Geological Survey sign. Road from Phoenix comes in on right. This point is mile 33.9 of log given on page 381. Follow this west into Gila Bend.

44.1 **Gila Bend.** For other roads from Gila Bend see pages 381–392.

GILA BEND TO MARICOPA (44.1 MILES).

[See p. 375 for log in opposite direction.]

0.0 **Gila Bend.** (For other roads from Gila Bend see pp. 381–392.) Geological Survey sign. Follow Phoenix-Gila Bend road. (See p. 381.)

30.0 Fork. Geological Survey sign. Keep to right on north side of railroad. Left-hand road goes to Phoenix.

32.3 Enid. **Water in emergencies** at section house. Continue east.

37.2 Heaton. Switch on railroad. No houses. Turn to right (south) across tracks and go southeast, avoiding fork to left just south of track. Phoenix–Maricopa road comes in on left (north). This point is mile 29.1.

40.1 **Peblo Well. Good water.** Turn east and follow main traveled road, avoiding numerous forks and crossroads. Much drifted sand and many adobe flats.

44.1 **Maricopa.** Post office, **water,** hotel, supplies, gasoline. For other roads from Maricopa see pages 375–381.

PHOENIX TO MARICOPA BY WAY OF GILA CROSSING (36 MILES).

[See below for log in opposite direction.]

Except the very roundabout route through Florence and Casa Grande any road from Phoenix to Maricopa involves fording Gila River. This can not be done when the river is in flood, and information should be obtained before starting. (For other roads from Phoenix see pp. 363, 368–369, 381–385.)

0.0 **Phoenix.** Take road to **Gila Bend** by way of **Gila Crossing.** (See p. 381 for log.)

16.5 **Gila Crossing.**

23.9 Fork. Geological Survey sign. Keep to left (south) across plain on good desert road. Right-hand road goes to **Gila Bend.**

25.2 Fork. Keep to right (south). Left-hand road goes to **Maricopa** also. The distance is 8 miles, but the road is said to be sandy and bad.

29.1 Heaton. Switch on railroad, no houses. Cross railroad and go southeast, avoiding fork to left just south of track. Road comes in on north side of track from Enid (4.9 miles) and **Gila Bend.** (See p. 375.)

32.0 **Peblo Well. Good water.** Turn east and follow main traveled road toward railroad water tank, avoiding numerous forks and crossroads. Much drifted sand and many adobe flats.

36.0 **Maricopa.** Post office, **water,** hotel, supplies, gasoline. (For other roads to Maricopa see pp. 375–381.)

MARICOPA TO PHOENIX BY WAY OF GILA CROSSING (36 MILES).

[See above for log in opposite direction.]

0.0 **Maricopa.** Cross railroad track and go west toward gap between Sierra Estrella and Palo Verde Mountains, avoiding road to left, which goes to **Akchin.** (See p. 377.)

4.0 **Peblo Well. Good water.** Turn northwest toward railroad.

6.9 Heaton. Switch on railroad, no houses. Cross railroad and go north across plain on good desert road. From Heaton a road goes west to **Gila Bend.** (See p. 375.)

10.8 Reverse fork. Road from **Maricopa** (8 miles) comes in on right.

12.1 Reverse fork. Geological Survey sign. Road from **Gila Bend** comes in on left. For detailed log follow Gila Bend-Phoenix road from this point, which is mile 40.0 in that log. (See p. 382.)

18.5 **Gila Crossing.**

36.0 **Phoenix.** For other roads from Phoenix see pages 363, 368–369, 381–385.

MARICOPA TO VEKOL VALLEY, KAKA, AND COVERED WELLS (78.7 MILES).

[See pp. 379–380 for log in opposite direction.]

This road is hardly a through route, in the commonly accepted sense. The road from Maricopa to Vekol Valley is, however, good and in common use by the Papagos and some prospectors. The road from Kaka to Covered Wells was not traveled, and distances are given as measured on the maps.

0.0 **Maricopa.** Post office, store, gasoline, **water from railroad well.** From post office, cross railroad at station and go southwest to well derricks visible across the plain. Many intersecting roads.

1.9 Turn into lane between wire fences.

2.4 **Akchin. United States Indian Service well and pumping plant.** Similar plants half a mile west and south. Turn west along fence.

2.7 Turn southwest and cross north and south road at mile 3.0. This road goes south about 24 miles to **Cocklebur.** (See p. 380.)

5.0 Fork. Keep to left; road on right goes 0.7 mile to **Drake's ranch, well and good water; last permanent water on this road for 71 miles.** From Drake's ranch an old road leads around the south end of Palo Verde Mountains into the southern portion of the Jornada de las Estrellas. There is said to be a spring in a canyon below a cliff, 16 miles out on this road.

5.7 Crossroads. Keep straight on south along alluvial slope over fair plains road, crossing numerous washes, toward pass in rugged granite mountains. Road on right is second road to **Drake's ranch;** road on left goes to another ranch.

16.6 Cross arroyo and turn to right in pass.

17.0 Cross arroyo and go southwest across rolling country in open valley toward second pass in brown, flat-topped hills.

18.6 Beginning of second pass. Faint road goes off southeast toward Table Top Mountains.

18.8 Sand tank in arroyo on left of road. **Water can be found here after rains by digging about 4 feet in the sand—not dependable.** Continue west in narrow valley.

19.7 Turn sharply to left (south) over lava point.

20.0 End of lava. Go south over alluvial slope into Vekol Valley, toward small hill in center of valley. Antelope Peak on left.

22.9 Faint road comes in on right.

24.9 Go down bank into trench along main arroyo of Vekol Valley; granite hill on left.

25.4 Cross main arroyo; very sandy and bad crossing. Go south on west side of arroyo, through mesquite-covered flat.

26.0 Faint road crosses arroyo and goes toward Antelope Peak.

28.2 Water hole. Water is found by digging in sand in sharp elbow of main arroyo below entrance of tributary; **water for a few weeks after rains.**

30.6 Brush corral on left; charco just south of corral on main arroyo; **water only after rains.** Go south over alluvial slope; grassy flats on the left.

32.9 Reverse fork. Geological Survey sign. Continue south. This road comes in from **Stouts Well** (9 miles), the **nearest permanent water.** (See p. 386.) Faint road crosses grassy flat at this point and leads to Vekol; not easily traveled.

33.1 Faint road on left.

34.5 Fork. Keep to right (south).

34.8 Fork. Keep to right (south); road on left goes to Vekol. (See p. 386.)

35.5 Faint road on right goes to **spring** and abandoned ranchería, under north side of Squaw Tit Peak. **Spring has small but permanent flow.** It is impossible to get within a mile of spring with an automobile, and difficult for a wagon. The trail from **Stouts Well** is badly washed but passable for horses (4 miles).

37.2 Faint road on right.

39.4 Small gravel hill on left.

40.4 **Totobit Tanks.** Road turns to left and crosses arroyo by gravel hill. Tanks are to left in channel of arroyo and consist of a number of plunge pools and potholes in black lava and conglomerate. Tanks hold a good deal of water and **have water for a large part of the year.**

40.6 Fork. Keep to left; right-hand road avoids village of Totobit.

40.9 Totobit. Summer ranchería; about 3 houses on gravel hill; temporales to the south and east. The **Murray & Lopez Well** is 1 mile north, but no information is available concerning it. From Totobit go south over adobe flat.

41.4 Reverse fork. Road direct from Totobit Tanks.

45.3 Small charco on right of road. Bear to right into pass.

45.7 Charcos on right.

47.8 House on top of gravel hill. Sign in boulders on left of road: "San Jose, April 18, 1906." Go downhill past ruined represo into valley between basalt plateaus.

48.9 Charco on right of road.

49.2 Kaka. Summer ranchería in valley between lava plateaus; **no permanent water.** From Kaka roads lead to **Moivavi** and Emita (see p. 388). The road to **Covered Wells** was not traveled, and distances are given as measured on the map. Turn south and go through pass, avoiding fork on left, and continue south, keeping the mountain mass south of Kaka on the right.

57.2 Fork. Keep to left and turn southeast to south side of butte. Road to right goes through pass in lava plateaus to Perigua (13 miles).

58.2 Butte on left (north).

61.7 Cross southern spur of small mountains. Two natural windows in the rocks of these mountains.

65.2 Northeast corner of temporal. Go south along east side into rolling country between Sierra Blanca and Brownell Mountains. Most of the way is over rocky hills, with many short but steep inclines and pitches.

71.7 Reverse fork. Road from Charco de la Piedra comes in here. (See p. 409.) Probably more roads than shown, as this region has been actively prospected. Head toward south end of Brownell Mountains.

76.2 **West wells of Covered Wells; permanent water.** Road comes in from **Pozo Blanco.** (See p. 345.) Go down rocky valley with scattered Papago houses.

78.7 **Covered Wells.** Store, **two wells.** From Covered Wells roads lead to **Brownell,** but their exact route is not known, to **Horseshoe,** and to points in Santa Rosa Valley.

COVERED WELLS TO KAKA, VEKOL VALLEY, AND MARICOPA (78.7 MILES).

[See pp. 377–379 for log in opposite direction.]

0.0 **Covered Wells.** Store, **two wells.** Go west up rocky valley, with scattered Papago houses.

2.5 **West wells of Covered Wells; permanent water.** Road forks just west of corral and wells; take right-hand road northwest, over rolling country. Road rocky with many short inclines and pitches. There are probably many more roads than are shown on map, as this country has been actively prospected for many years. Distances are given as measured on the map as far as Kaka. Road to left goes west to **Pozo Blanco.** (See p. 345.)

7.0 Fork. Take right-hand road toward small rugged mountain ranges on north. Left-hand road goes northwest and crosses end of Sierra Blanca to Charco de la Piedra. (See p. 409.)

13.5 Northeast corner of temporal. Go west along north side and then northwest to south end of small ragged mountains. Two natural windows in the rocks of these mountains.

17.0 Cross southern spur of mountains and go northwest across plain toward lone butte.

20.5 Butte on right (north).

21.5 Reverse fork. Go north parallel to mountains on left and then through narrow pass. Road comes in on left from Perigua (13 miles).

29.5 Kaka. Summer ranchería, in valley between lava plateaus. **No permanent water.** Fields to the right; scattered houses. From Kaka roads lead to **Moivavi** and Emita. (See p. 388.) To go to Vekol Valley turn to right and go through pass on east.

29.8 Charco on left of road.

30.9 House on top of gravel hill; sign in boulders on right of road, "San Jose, April 18, 1906." Ruined represo just west.

33.0 Charcos on left. Turn northeast down little valley.

33.4 Small charco on left. Go north into upper end of Vekol Valley.

37.3 Fork. Keep to right. Left-hand road goes direct to Totobit Tanks.

37.8 Totobit. Summer ranchería; about 3 houses on gravel hill. Temporales to the south and east. The **Murray & Lopez Well** is 1 mile north, but no information is available as to the amount and value of the water. Turn west from Totobit.

38.3 **Totobit Tanks.** Cross arroyo and turn to right (north). The tanks are to the right in the channel of the arroyo and consist of a number of plunge pools and potholes in black lava and conglomerate. The tanks hold a good deal of water and **have water for a large part of the year.**

39.3 Small gravel hill on right. Road runs north on west side of grassy flats which occupy center of the valley.

41.5 Faint road on left.

43.2 Faint road on left goes to **spring** and abandoned rancheria under north side of Squaw Tit Peak. The **spring has a small but permanent flow.** It is impossible to get within a mile of the spring with an automobile and difficult for a wagon. The trail from **Stouts Well** is badly washed but passable for horses (4 miles).

43.9 Reverse fork. Road from Vekol comes in on right. (See p. 387.)

44.2 Reverse fork.

45.6 Faint road on right.

45.8 Fork. Geological Survey sign. Keep to right. Road to **Stouts Well** turns off to left. Nearest water 9 miles by this road. (See p. 387.)

48.1 End of grassy flats. On right Brush corral. Charco just south of corral on main arroyo. **Water only after rains.**

50.2 Water hole. **Water is found by digging** in the sand in sharp elbow of the main arroyo below entrance of tributary; it **lasts only for a few weeks after a rain.**

52.7 Faint road crosses arroyo on right and goes toward Antelope Peak.

53.3 Cross main arroyo, very sandy and bad crossing, and go along west slope of lone rocky hill.

58.3 Go up bank onto gravelly alluvial slopes, then slightly east of north, with Antelope Peak on right.

55.8 Faint road on left.

58.7 Go onto lava, which is western projection of small lava hills.

59.0 Turn sharply to right into narrow pass.

59.9 Sand tank in arroyo on right of road. **Water can be found here after rains** by digging about 4 feet into sand. Go east in rolling rocky country to pass in granite hills ahead.

60.1 Faint road goes southeast toward Table Top Mountains.

61.7 Cross arroyo.

62.1 Cross arroyo and go north out of pass along alluvial slope over fair desert road, crossing numerous washes.

73.0 Crossroads. Keep straight on toward well derricks at **Akchin.** Road on left goes half a mile to **Drake's ranch; well and good water.** From this ranch an old road leads around south end of Palo Verde Mountains into southern portion of Jornada de las Estrellas. There is said to be a spring in a canyon below a cliff 16 miles out on this road. Road to right goes to another ranch.

73.7 Reverse fork. Second road from **Drake's ranch** comes in. Go north and east to center of three well derricks.

76.3 **Akchin. United States Indian Service well and pumping plant.** Similar plants half a mile west and south. Turn north tnrough lane on right of center well.

76.8 End of lane. Turn northeast toward railroad. Water tank at **Maricopa** easily visible. Take best of various roads.

78.7 **Maricopa,** post office, store, gasoline, **water from railroad well.** For roads from Maricopa see pages 368, 375–381.

MARICOPA TO COCKLEBUR (27 MILES).

This road goes southeast from the United States Indian Service wells at Akchin. These wells are 2.4 miles southwest from Maricopa and the well derricks are plainly visible. From these wells a road goes south and then turns southeastward across the plains to Cocklebur. About 3 miles from Cocklebur it crosses a spur from the mountains west of that place. The distance from Maricopa to Cocklebur is about 27 miles. (For roads from Cocklebur see p. 375.)

ROADS OUT OF GILA BEND.

PHOENIX TO GILA BEND BY WAY OF GILA CROSSING (63.9 MILES).

[See pp. 382–383 for log in opposite direction.]

Two routes lead to Gila Bend from Phoenix, one by way of Buckeye, which crosses Gila River on the ford south of that village, and one which goes south on the bridge over Salt River and crosses the Gila at the ford between Salt River Mountains and the Sierra Estrella, called Gila Crossing. Neither route can be used during high water on the Gila. The ford is likely to be treacherous at any time, but at Gila Crossing there is daily traffic, because of the Indian villages on either side of the river. If the machine gets stuck in the mud or quicksand, an Indian can usually be induced to bring his team and haul it out. The Indians ordinarily set a high value on their services.

0.0 **Phoenix.** Travelers should carry water for the whole trip, if possible. A well has been drilled at Mobile, 36 miles from Phoenix, and water can probaby be obtained there. Go south on Center Street and cross Arizona Eastern (Southern Pacific) Railroad tracks at mile 0.3 and concrete bridge over Salt River at mile 1.7. Avoid crossroads.

4.7 Turn to right (southwest) along north bank of Western Canal.

6.4 Cross lateral and then main canal at bend and go along south bank of canal. One may also cross lateral and go west 1.3 miles and then turn southwest and cross Western Canal.

8.4 Geological Survey sign on south bank of Western Canal and edge of desert. Many wells at farms this far. Go southwest over good plains road through open gap between isolated hill and Salt River Mountains.

11.8 **Williamson store.** Abandoned store building and **well;** many roads come in and go out at this point. Take main traveled road south; sandy valley road.

14.3 **Komatke.** Indian village. Geological Survey sign. Post office, small store, mission buildings of St. John's Chapel west. If water is necessary get it here. From this point take main traveled road south, keeping house with tin roof to left.

16.5 Geological Survey sign at head of lane going southwest to river. Follow latest and best-looking tracks over ford. **Gila Crossing** should always be given careful inspection. Low-powered and heavy automobiles should be cautious. There is usually **water in the river at this point.** At end of ford turn right and go through Pima village, following best track.

18.1 Cross Santa Cruz River to gravel bench at foot of Sierra Estrella and go southeast along this bench. Santa Cruz River is here little more than an irrigating ditch. The crossing is treacherous and travelers should be cautious. There is heavy sand going in and out of the channel and mud at the bottom.

21.2 Fork. Keep to the right. The left-hand road goes along the margin of the Santa Cruz Cienaga, a low area of swamp and salt grass. By this road it is approximately 10 miles to **Maricopa.** It is, however, poor and sandy. Log of better road is given on page 376.

21.9 Turn slightly and go south across plain.

23.9 Fork. Geological Survey sign. Take right-hand road toward south end of Sierra Estrella, skirting mountains over rough desert road. Left-hand road goes to **Maricopa.** (See p. 376.)

31.3 Fork. Geological Survey sign. Take left-hand road toward railroad across adobe flat. Right-hand road goes west to small blackish mountains. It is the old stage road from Maricopa Wells to Gila Bend and is passable for 6 miles only.
32.1 Crossroads. Continue southwest.
33.9 Reverse fork. Geological Survey sign. Go west along railroad track. Road comes in along track from Enid and **Maricopa.**
36.1 **Mobile;** station and section house. **Well.**
45.7 Estrella station and section house. **Water in emergencies.**
46.1 Cross railroad tracks and go west in pass.
50.2 Cross railroad track and go west toward small rocky hill.
51.3 Turn southwest to railroad.
53.6 Turn west along railroad and go down alluvial slope.
54.9 Bosque, station and section house; **water in emergencies.**
60.9 Coledon, station and section house; **water in emergencies.**
62.9 Turn to left across railroad tracks. Reverse fork on south side, road comes in from **Mesquite Tank.** (See p. 391.) Go west along track.
63.6 Double reverse fork. Geological Survey sign. Turn to right and cross canal and railroad track into town.
63.9 **Gila Bend.** Geological Survey sign. Post office, **water,** eating house, rooms, supplies, gasoline. (For roads from this town see pp. 375–376, 381–392.)

GILA BEND TO PHOENIX BY WAY OF GILA CROSSING (63.9 MILES).

[See pp. 381–382 for log in opposite direction.]

0.0 **Gila Bend.** Geological Survey sign. Travelers should carry water for the whole trip if possible. A well has been drilled at Mobile, 28 miles from Gila Bend, and water can probably be obtained there. Go south across railroad and canal to fork.
0.3 Double fork. Geological Survey sign. Turn to left (east).
1.0 Fork. Turn to left across railroad and go east on north side of track. Road on right, rather faint, goes to **Mesquite Tank.** (See p. 391.)
3.0 Coledon. Station and section house; **water in emergencies.**
9.0 Bosque. Station and section house; **water in emergencies.**
10.3 Turn northeast toward pass.
12.6 Turn east into pass.
13.7 Cross railroad tracks.
17.8 Cross railroad track at east end of pass.
18.2 Estrella station and section house. **Water in emergencies.** Go east on north side of track, going around railroad wye.
27.8 **Mobile.** Station and section house. **Well.**
30.0 Fork. Geological Survey sign. Turn to left across adobe flat; right-hand road follows along track to Enid and **Maricopa.** (See p. 376.)
31.8 Crossroads. Continue northwest.
32.6 Reverse fork. Geological Survey sign. Go north of hill and skirt southern end of Sierra Estrella. Old stage road from Gila Bend to Maricopa Wells comes in on left. It is impassable beyond black hills, 6 miles out.
40.0 Reverse fork. Geological Survey sign. Road comes in on right from **Maricopa.** (See p. 375.) Go north from this sign parallel to Sierra Estrella.

42.7 Reverse fork. Road comes in on right from **Maricopa** (p. 375).

45.8 Cross Santa Cruz River. Among scattered Indian houses and fields, follow best-traveled road through Pima village to Gila River. Santa Cruz River at this point is little more than an irrigating ditch. The crossing is treacherous and travelers should be cautious. There is heavy sand going in and out of the channel and mud at the bottom.

46.4 **Gila Crossing.** Follow latest and best-looking tracks over ford. Gila Crossing should always be given careful inspection. Low-powered and heavy automobiles should be cautious.

47.4 Geological Survey sign at end of lane leading from ford, about half a mile from river. Go north on best-traveled road over sandy plain. Keep house with tin roof on right.

49.6 **Komatke.** Indian village. Geological Survey sign. Post office, small store. Mission buildings of St. John's Chapel west. If water is necessary get it there. Go north on main traveled road toward gap between isolated hill and Salt River Mountains.

52.1 **Williamson store.** Abandoned store building and **well.** Many roads coming in and out at this point. Go northeast by good desert road through gap.

55.5 Geological Survey sign on south bank of Western Canal. Numerous wells at farmhouses from this point. Turn west and follow south bank of canal for two miles and then cross it, or cross canal and go northeast for seven-tenths of a mile and then turn east on south side of lateral.

57.5 Go northeast on northwest side of Western Canal.

59.2 Turn north between fences and farms, avoiding crossroads.

62.2 Cross Salt River on concrete bridge.

63.6 Cross railroad tracks.

63.9 **Phoenix.**

PHOENIX TO GILA BEND BY WAY OF BUCKEYE (69.5 MILES).

[See pp. 384–385 for log in opposite direction.]

By C. P. Ross.

0.0 **Phoenix.** Go west on Phoenix-Yuma road. (For detailed log see U. S. Geol. Survey Water-Supply Paper 490-C, p. 283.)

34.2 **Buckeye.** Post office, **wells,** hotel, stores, garage, gasoline. Go west.

34.5 Fork. Geological Survey sign. Turn south (left) on fair to good road. Road west leads to **Palo Verde, Yuma, and Parker.**

35.9 North bank of Gila River. The river can, under favorable conditions, be crossed by automobiles at this place. Do not attempt to ford when the river is in flood. It is frequently necessary, even when the river is almost dry, for automobiles to be towed across by horses. The sandy bed of the stream is about a mile wide here.

37.0 South bank of Gila River. Go south and west over fair to good desert road all the way to Gila Bend.

39.8 Fork. Take left-hand road (south), which is probably better. Road to right goes through farm lands under Gila Water & Land Co. project. **Water** may be obtained at any of these farms.

40.8 Corner of cleared land. Go west along south border of cleared land.

42.3 Reverse fork. Road on right is same as right-hand turn at mile 39.8.

48.4 Reverse fork. Faint road, seldom used, comes in from **Liberty.**

53.2 Cross abandoned irrigation canal. Road passes through breaches in canal wall in a sharp S curve. Careful driving necessary.

54.4 Reverse fork at fence corner.
54.9 Abandoned house and store. Shallow dry well. Continue on main road.
56.9 Abandoned farm. Two dry wells. Continue straight ahead.
60.1 Unoccupied ranch. Well with windmill. **Salty water** could be obtained at times; unreliable.
62.2 Frandsen & Knudsen's ranch. Well with very **salty water, unfit for drinking,** a quarter of a mile to right of road. Continue on main road.
64.1 Abandoned farm. Well caved and windmill out of order.
66.3 Reverse fork. Faint road on right.
66.8 Reverse fork. Road on right leads from ranch.
67.3 Reverse fork. Road on right leads from ranch.
69.5 **Gila Bend.** Geological Survey sign. Post office, **water,** eating house, rooming house, stores, gasoline.

GILA BEND TO PHOENIX BY WAY OF BUCKEYE (69.5 MILES).

[See pp. 383–384 for log in opposite direction.]

By C. P. Ross.

0.0 **Gila Bend.** Geological Survey sign. Go north through town. The road all the way to Gila River crossing is fair to good desert road.
2.2 Fork. Turn to right on most traveled road; road on left leads to ranch.
2.7 Fork. Continue on main road; road on left leads to ranch.
3.2 Fork. Continue on main road, avoiding faint road on left.
5.4 Abandoned farm. Well caved and windmill out of order.
7.3 Frandsen & Knudsen's ranch. **Well with very salty water, unfit for drinking,** a quarter of mile to left of road. Continue on main road.
9.4 Unoccupied ranch. Well with windmill. Salty water could be obtained at times; unreliable.
12.6 Abandoned farm. Two dry wells. Continue straight ahead.
14.6 Abandoned house and store. Shallow dry well. Continue on main road.
15.1 Fork. Continue straight ahead, avoiding faint road on left around corner of fence.
16.3 Cross abandoned irrigation canal. Road passes through breaches in canal wall in a sharp **S** curve. Careful driving necessary.
21.1 Fork. Continue on main road. Faint road on right leads to **Liberty;** seldom used.
27.2 Fork. Either road can be used. Take road on right, which is probably the better of the two. Farm lands under Gila Water & Land Co. project are now entered. Water may be obtained at any of these farms.
28.7 Corner of cleared land. Go north along east border of cleared land.
29.7 Fork. Turn to right and go north and east. Road coming in on left is from farms in this project, and is the road encountered if the left-hand road at mile 27.2 is taken. Follow main traveled road; sandy but not difficult.
32.5 South bank of Gila River. The river can under favorable conditions be crossed by automobiles at this place. Do not attempt the ford when river is in flood. It is frequently necessary, even when the river is almost dry, for automobiles to be towed across by horses. The sandy bed of the stream is about a mile wide here.
33.6 North bank of Gila River. Continue due north on fair to good road.
35.0 Fork. Geological Survey sign. Turn east (right). Road west leads to **Palo Verde, Yuma, and Parker.**

35.3 **Buckeye.** Post office, **well,** hotel, stores, garage, and gasoline. Go east on Phoenix-Yuma road. (For detailed log see U. S. Geol. Survey Water-Supply Paper 490-C, p. 289.)
69.5 **Phoenix.**

GILA BEND TO SENTINEL (30 MILES).

[See below for log in opposite direction.]

By C. P. Ross.

0.0 **Gila Bend.** (For other roads from Gila Bend see pp. 375–376, 381–392.) Geological Survey sign. Go west from sign and follow north side of railroad track. The road is all fair to good mesa and desert road.
0.9 Reverse fork. Road comes in from across track (south).
2.2 Turn slightly away from track.
3.8 Smurr. Station house on railroad about 0.4 mile south of road.
6.1 Turn west along old abandoned canal and cross small abandoned canal.
7.5 Turn southwest, following canal to railroad track.
8.7 Turn west along track.
9.2 Box-car houses along track just south of this point.
15.0 Piedra. **Water in emergencies** at section house.
22.1 Tartron. **Water in emergencies** at section house. Road south from Tartron goes to Rawley mines (14 miles).
29.0 Houses on north side of track. Reverse fork; road, usually obliterated, comes in on right from **Jordon's ranch** (11 miles). Go west of station to Geological Survey sign.
29.5 Railroad crossing. Geological Survey sign. Turn to left and cross railroad and go back (east) in front of Brown's Hotel to Sentinel station. At the sign a road comes in from **Agua Caliente** (14 miles), and along the track is the Tucson-Yuma road.
30.0 **Sentinel. Water from railroad well.** Store, hotel, gasoline.

SENTINEL TO GILA BEND (30 MILES).

[See above for log in opposite direction.]

By C. P. Ross.

0.0 **Sentinel.** Railroad station. (For other roads out of Sentinel see pp. 339, 340.) Go west in front of Brown's Hotel.
0.5 Railroad crossing. Geological Survey sign. Cross railroad and turn abruptly to right (east). Road on left is Tucson-Yuma road (see p. 339); that straight ahead leads to **Agua Caliente** (14 miles). Continue east along railroad. Opposite to railroad station the road is often not visible. Avoid road branching to left (north) to **Jordon's ranch** (11 miles) and keep along railroad track. The road from Sentinel to Gila Bend is all fair to good mesa and desert road.
7.9 Tartron. **Water in emergencies** at section house. Continue straight ahead (east) along railroad. Road south from Tartron goes to Rawley mines (about 14 miles).
15.0 Piedra. **Water in emergencies** at section house.
20.8 Box-car houses along railroad just south of this point.
21.3 Turn northeast away from railroad along abandoned irrigation canal.
22.5 Turn east, crossing small abandoned canal.
23.9 Turn southeast, leaving canal.
26.2 Smurr. Station house on railroad about 0.4 mile south of road.

27.8 Road comes close to railroad. Continue east.
29.1 Fork. Continue straight ahead, avoiding road forking to right across railroad.
30.0 **Gila Bend.**

GILA BEND TO VEKOL (46.3 MILES).

[See p. 387 for log in opposite direction.]

The road from Gila Bend to Vekol follows an old Indian trail, but its present form is largely due to the permanent supply of water obtained at Stouts Well. The road is rough and has many sharp curves and steep pitches. Only light and short automobiles in good condition can make the trip.

0.0 **Gila Bend.** Geological Survey sign. Cross railroad tracks west of station and then old canal.
0.3 Fork. Geological Survey sign. Take road to southeast, fair road across alluvial plains.
2.8 Fork. Take left-hand road; has small board sign reading "To Stouts Well." Right-hand road is Gila Bend-Pozo Blanco road by way of Sauceda. (See p. 388.)
13.0 Wire corral to left, hill to right on entering gap in the mountains. Follow up narrow valley between lava plateaus.
13.4 Cross large arroyo, heavy sand.
16.6 Halfway corral on left. Road hilly and rocky from this point.
19.3 Dim trail goes north from this point to Mesquite Tank. (See pp. 391–392.)
22.8 **Sand Tanks.** Rock tanks on left of and about 30 feet below the road in large arroyo. **Good water except during very dry seasons** or when tanks have been used for watering cattle. The road goes east through the gap. The traveler going east usually takes the right-hand road, which has a very heavy grade. It is, however, usually easier to make than the heavy sand of the arroyo on the left-hand road.
25.6 Drift fence. Go through gate and leave open or closed as found. The road now descends in bed of dry stream for a little over a mile. It is very rough, and careful driving is necessary.
28.2 Fork. Keep to right; left-hand road avoids Stouts Well.
29.3 **Stouts Well. Good and permanent water in well.** Usually someone will be found at the cattle ranch established at this well. Go east outside of fence and along arroyo. The road is very bad and often obliterated by cattle tracks.
30.7 Reverse fork. This road comes directly from the gap, avoiding **Stouts Well.**
31.9 Limestone hill on right.
36.6 Dry well on right.
38.3 Fork. Geological Survey sign. Turn to right (south) on main north and south road in Vekol Valley. This is the Maricopa-Covered Wells road. (See p. 377.)
38.4 Faint road to left.
38.8 Cross arm of grassy flat.
39.9 Faint road to left.
40.4 Fork. Take road to left toward Vekol visible against hillside across the valley. The road straight ahead is the Maricopa-Covered Wells road and goes south to Totobit and Kaka. (See p. 377.)
42.7 Fork. Keep to right.

43.1 Ruined house on right.
45.3 Reverse fork. Road from **Bitter Well** comes in.
46.3 Vekol. Abandoned mining town. Caretaker here part of time; **when he is present water can be obtained.** From Vekol a road goes to **Bitter Well** (2.5 miles) and thence to **Reward mine.** (See p. 375.)

VEKOL TO GILA BEND (46.3 MILES).

[See pp. 386–387 for log in opposite direction.]

0.0 Vekol. Abandoned mining town. Caretaker here part of time; **when he is present water can be obtained.** From Vekol a road goes to **Bitter Well.** (See p. 375.)
1.0 Fork. Keep to left. Rieght-hand road around point of hill goes to **Bitter Well.** (See p. 375.)
3.2 Ruined house on left.
3.6 Reverse fork. Go northwestward across grassy flats of Vekol Valley.
5.9 Reverse fork. Turn north on Maricopa-Covered Wells road. (See p. 377.)
6.4 Faint road on right.
7.5 Cross arm of grassy flat.
7.9 Faint road on right.
8.0 Fork. Geological Survey sign. Turn to left. Road north goes to **Maricopa.** (See p. 377.)
9.7 Dry well on left.
14.4 Limestone hill on left.
15.6 Fork. Keep to left over very bad road, along arroyo. This road is often obliterated by cattle tracks. Road on right goes directly to pass, avoiding Stouts Well.
17.0 **Stouts Well. Good and permanent water** in well. Usually someone will be found at the cattle ranch established at this well. Turn north from well.
18.1 Reverse fork. Direct road comes in from fork at mile 15.6. Turn west up pass over very bad road in bed of dry stream.
20.7 Drift fence. Go through gate and leave open or closed as found. Go down the west slope. Take right-hand turn and go down sandy bed of arroyo. This stretch of sand is about a mile long, but the left-hand road has an impossibly steep grade for westbound automobiles.
23.5 **Sand Tanks.** Rock tanks on right of and about 30 feet below road in large arroyo. **Good water except during very dry seasons or** when tanks have been used for watering cattle.
27.0 Dim trail goes north from this point to Mesquite Tank. (See p. 391.)
29.7 Halfway corral on right. Road goes west in narrow valley between lava plateaus. Good except for a few sandy washes.
32.9 Cross large arroyo; heavy sand.
33.3 Hill on left and wire corral on right. Turn to right (northwest) out of gap on desert road.
43.5 Reverse fork. Small wooden sign. Gila Bend-Pozo Blanco road by way of Sauceda comes in on left.
46.0 Reverse fork. Geological Survey sign. Cross old canal and railroad tracks.
46.3 **Gila Bend.** Geological Survey sign.

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GILA BEND TO POZO BLANCO BY WAY OF SAUCEDA (63.7 MILES).

[See p. 389 for log in opposite direction.]

This road leads from Gila Bend into the heart of the Indian country. It is a difficult but not an impossible route for automobiles.

0.0 Gila Bend. Cross railroad tracks west of station and old canal.

0.3 Fork. Geological Survey sign. Take road to southwest.

2.8 Fork. Take right-hand road and go south toward gap between Sand Tank and Sauceda mountains. Left-hand road goes to Stouts Well and Vekol and is marked by small wooden sign. (See p. 386.)

24.0 Point of plateau on right. Cross arroyo and enter pass.

26.3 Pass close under hill to right in narrow pass.

28.1 **Small springs** on right of road and Papago houses.

28.8 **Sauceda.** Winter ranchería; **well** on right of road. **Permanent water.** This is one of the largest of the Papago settlements. From Sauceda roads go to **Moivavi,** winter ranchería and **well,** and direct to Kaka, summer ranchería. The location and character of these roads are not known. One can go to Kaka, however, by turning off the road here described at Emita, and from there get within 4 miles of Moivavi by automobile. (See p. 377.) To go to Perigua and Pozo Blanco, continue southwest up valley from well at Sauceda through a pass. Top of pass is about 4½ miles from Sauceda, and on coming into Perigua Valley road makes a sharp bend to right (west) at base of hill.

35.8 Reverse fork. Road comes in on right, which is impassable for automobiles for 2 miles.

36.3 Fork. Keep to left and go south in center of valley toward isolated hill at Perigua. This road and many others go to Toapit, summer ranchería; **no permanent water.** As charcos and temporales shift year by year there are many roads. (See Pl. XXVIII, *B*.)

36.8 Emita. Summer ranchería; **no permanent water.** Continue south on west side of temporal.

40.5 Road Runner. Summer ranchería; no permanent water.

42.8 Perigua. Summer ranchería, houses on east side of isolated hill; **no permanent water.** Road to **Pozo Blanco** goes east between temporales toward conical peak. Numerous forks and crossroads. A road also goes southwest to a gap and thence to Pozo Redondo. (See p. 409.)

43.6 Cross adobe washes. Charcos near this point hold **water for short time after rains.**

43.8 Fork. Take right-hand road; go southeast. The left-hand road goes east through pass 11 miles to junction with road from Maricopa to Covered Wells. (See p. 377.)

44.4 Cross wash.

46.1 Small hill on right, thence through adobe flat with mesquite trees into pass between lava-capped mesas.

49.2 Top of low pass. Go down alluvial slope, soft and sandy, and thence southeast across Quijotoa Valley.

51.2 Crossroads. Go straight ahead toward south end of Sierra Blanca. East-west road goes from Charco de la Piedra to **Covered Wells.** (See p. 409.)

56.7 Mowepa. Summer ranchería. Houses, represo, fields, **no permanent water.** Go south of represo and corral and north of church and turn southeast. Another road goes south from this point to other temporales.

62.2 Reverse fork. Geological Survey sign. Go east into pass between Sierra Blanca and Quijotoa Mountains. Pozo Blanco route of Tucson-Yuma road comes in on right. (See p. 345.)

63.1 Fork. Keep to right; left-hand road goes to **Black Prince mine** and **Brownell.**

63.7 **Pozo Blanco.** Winter ranchería; **well** in the corrals on the left.

POZO BLANCO TO GILA BEND BY WAY OF SAUCEDA (63.7 MILES).

[See pp. 388–389 for log in opposite direction.]

0.0 **Pozo Blanco.** (For other roads from this place see pp. 345, 397.) Go west on Tucson-Yuma road.

0.6 Reverse fork.

1.5 Fork. Geological Survey sign. Take right-hand road toward lava plateau northwest across Quijotoa Valley.

7.0 Mowepa, summer ranchería. Houses, represo, fields; **no permanent water.** Go south of corral and represo and north of church, and turn northwest toward gap in plateau.

12.5 Crossroads. Keep straight on, up alluvial slope, soft and sandy, into pass between low lava mesas.

14.5 Top of pass. Go down into adobe flats with mesquite trees. Small hills on left, plateaus on right.

17.6 Close under small hill on left.

19.3 Cross wash.

19.9 Reverse fork, under big conical peak; turn across Perigua Valley to isolated hill.

20.1 Cross adobe washes; charcos along these washes. Go south of wire fence and thence north to houses on side of hill.

20.9 Perigua. Summer ranchería; **no permanent water.** Go north up valley. Road to **Pozo Redondo** and **Ajo** goes southwest. (See p. 409.)

23.2 Road Runner. Summer ranchería; **no permanent water.** Continue north up valley.

26.9 Emita. Summer ranchería; **no permanent water.** Avoid roads on left, which go to Toapit, summer ranchería, and go north up center of valley toward pass in mountains.

27.4 Reverse fork.

27.7 Fork. Turn to right, to northern base of hill, and then swing north through pass. Road on left impassable for automobiles.

34.9 **Sauceda.** Winter ranchería; **well with permanent water.** Go on down valley.

35.6 **Small springs** on left of road. Go on down open valley and strike west of north across Gila Bend Plains.

60.9 Reverse fork. Road from Vekol and **Stouts Well** comes in on right.

63.4 Road junction. Geological Survey sign. Cross canal and railroad track.

63.7 **Gila Bend.**

GILA BEND TO AJO (42.3 MILES).

[See p. 391 for log in opposite direction.]

The road from Gila Bend to Ajo is a good desert road which has considerable traffic. Its present location dates only from the building of the Tucson, Cornelia & Gila Bend Railroad. Prior to that time a number of variations were used. The principal one of these is the Gaskill road. This road is now aban-

doned and it is doubtful if it can be traveled over its full length. It goes north from Ajo on the east of No. 1 well and crosses a low and narrow part of Batomote Mountain. It then goes due north to a point east of Midway Well, where it swings west to Deadmans Gap and continues on the east side of the railroad, crossing the western part of the Sauceda Mountains about 1.5 miles east of Black Gap. Thence it crosses the Gila Bend Plains. This part of the road is badly washed and has many high centers. (For other roads from Gila Bend see pp. 375–376, 381–392.)

0.0 **Gila Bend.** Post office, **water,** eating house, rooms, supplies, gasoline. Go south and cross railroad tracks west of station and old canal.
0.3 Fork. Geological Survey sign. Turn to right; for left-hand roads see pages 382, 386, 391.
0.7 Fork. Keep to right across railroad tracks; left-hand road is Gaskill road.
0.8 Cross railroad and turn southwest toward Black Gap.
1.3 Reverse fork.
2.1 Fork. Keep to left. Right-hand road goes to **Stout's ranch** and **well. No other watering place for 31.5 miles.**
2.6 Turn west on south side of fence and cross Quilotosa Wash.
3.1 End of fence.
3.5 Cross wash.
10.3 Small hill on right of road.
15.1 Black Gap.
15.8 Cross sandy wash.
19.3 Cross railroad into Deadmans Gap. Just after crossing railroad Gaskill road comes in on left and 1.5 miles farther goes off again to left near a clump of small hills. In both places the road is so faint that some travelers may not notice it.
23.2 Cross to west side of railroad.
23.4 Midway Well on left near track. No equipment on this well, and **travelers can not obtain water.**
28.1 Enter gap in Crater Mountains. This erosional valley looks much like a volcanic crater, and is usually called "The Crater."
30.3 Out of gap into open valley.
32.4 Reverse fork at railroad crossing. Geological Survey sign. Cross railroad to east side and enter gap. Two roads come from right at sign. The first one is abandoned, the other, which comes in parallel with track, goes to No. 3 Well and **Sentinel.** (See p. 338.) On east side of track a faint road goes to a temporal and connects with Gaskill road.
33.6 **Batamote Well.** Geological Survey sign. **Good water** in dug wells on left.
34.5 Cross railroad.
39.4 Fork. Keep to left. Right-hand road goes to Gibson, a suburb of Ajo. It is very rough for automobiles.
40.2 Cross railroad to east side.
40.8 Reverse fork. Geological Survey sign. Road from **No. 1 well** comes in on left.
41.2 Reverse fork. Abandoned Gaskill road comes in on left.
42.0 Reverse fork. Geological Survey sign. Cross railroad and turn to right into town.
42.3 **Ajo.** Excellent **water supply;** hotels, stores, automobile supplies, repairs, gasoline, etc.

AJO TO GILA BEND (42.3 MILES).

[See pp. 389–390 for log in opposite direction.]

0.0 **Ajo.** (For roads from Ajo see pp. 338, 341, 402–416.) From railroad station go south and turn to left across railroad track.
0.3 Fork. Geological Survey sign. Turn to left (north). Right-hand road goes to **Clarkstown, Gunsight ranch,** and **Tucson.** (See p. 341.)
1.1 Fork. Keep to left. Abandoned Gaskill road on left.
1.5 Fork. Geological Survey sign. Keep to left. Right-hand road goes to **No. 1 Well.**
2.1 Cross railroad to west side.
2.9 Reverse fork. Rough road from Gibson, a suburb of Ajo, comes in on right.
7.8 Cross railroad.
8.7 **Batamote Well.** Geological Survey sign. Good water in two dug wells on right. **No watering place for 31.5 miles.** Go north through gap between Batamote and Childs mountains.
9.9 Cross railroad. Double fork. Turn to right (north) toward gap in Crater Mountains. Middle road is abandoned. Left-hand road goes to No. 3 Well and **Sentinel.** (See p. 338.) On east side of tracks a faint road goes east to a temporal and joins Gaskill road.
12.0 Enter gap in mountains. This erosional valley looks much like a volcanic crater and is usually called "The Crater."
14.2 Out of gap.
18.9 Midway Well on right near track. No equipment on this well, and **travelers can not obtain water.**
19.1 Cross to east of railroad and turn to left (north) into Deadmans Gap. The Gaskill road comes in on right south of the gap and leaves on north. In both places it is so faint that some travelers may not notice it.
23.0 Cross railroad to west side.
26.5 Cross sandy wash and go into Black Gap.
27.2 Black Gap. Gila Bend visible to the north.
32.0 Small hill on left of road.
38.8 Cross wash.
39.2 Turn on south side of fence and cross Quilotosa Wash.
39.7 Turn to right (north) along fence.
40.2 Reverse fork. Road comes in across fields from **Stout's ranch** and **well.**
41.0 Fork. Keep to right.
41.5 Cross railroad to east side.
41.6 Reverse fork. Gaskill road comes in.
42.0 Reverse fork. Geological Survey sign. Cross canal and railroad into town.
42.3 **Gila Bend.** Post office, water, eating house, rooms, supplies, gasoline.

GILA BEND TO MESQUITE TANK.

[See p. 392 for log in opposite direction.]

0.0 **Gila Bend.** Go south cross railroad and canal to fork.
0.3 Double fork. Geological Survey sign. Turn to left (east) on Gila Bend-Phoenix road.

1.0 Fork at railroad crossing. Turn to right (southeast) toward north end of small granite mountain.
7.7 North end of small granite mountain. Turn south into valley.
17.5 Double Butte lies west of road.
17.9 Turn southwest and then south.
20.2 **Mesquite Tank.** Small ranch. **Well** under low falls in bed of rocky arroyo.

MESQUITE TANK TO GILA BEND.

[See p. 391 for log in opposite direction.]

0.0 **Mesquite Tank.** Small ranch. **Well** under low falls in bed of rocky arroyo. Go north across arroyo.
2.3 Turn north into valley on east side of Double Butte.
2.7 Double Butte lies west of road.
12.5 North end of small granite mountain. Turn west into Gila Bend Plains.
19.2 Reverse fork at railroad crossing. Go west on south side of track.
19.9 Double reverse fork. Geological Survey sign. Turn north across canal and railroad.
20.2 **Gila Bend.** Geological Survey sign.

ROUTES IN THE BABOQUIVARI AND TECOLOTE VALLEYS.

The Baboquivari Valley lies on the west side of the mountains of the same name and is bounded on the west by the Sierra de Moreno, Las Animas Hills, and Artesa Mountains. The northern boundary is the constriction between the South Comobabi and Baboquivari mountains. South of the Tucson-Yuma road by way of Indian Oasis, which crosses the northern part of the valley, the roads are the direct result of the habits of the Indians. None of them have been run with a speedometer, and they are mapped as shown on the excellent detail sheets of the United States Indian Service made by Herbert V. Clotts, Percy Jones, jr., and Roy A. Goodman.

At the foot of or in the western canyons of Baboquivari Mountains are 14 settlements or winter rancherías, of which the principal ones are San Juan, Chuapo, Ventana, Fresnal, Bears Wells, and Hendricks Well. Fresnal is a very large village about midway in the mountains. It lies in a canyon, and the houses are scattered for 4 miles up the canyon. This village seems to have been originally supplied by springs or perhaps a small stream but now depends on 18 dug wells.

At an average distance of 6 miles from the mountains lie the summer rancherías Magdalena, Tucsoncito, Topahua, Komalik, Chulik, and San Miguel. Each has its near-by fields or temporales. There are also a few small and isolated temporales without names. San Miguel now has a permanent water supply because of the Indian Service well. The Indian Service wells at Topahua have no equipment. Thus for most of these localities water is obtained solely from represos and charcos. Some of these are large and hold water for several months in a year.

Roads run from each winter ranchería to the temporales cultivated by that village, usually the nearest ones. An almost continuous road also runs along the line of summer rancherías from north to south and then at San Miguel swings southeast to Lopez Well and store and to Pozo Verde, a large winter ranchería in Mexico.

The drainage of the Baboquivari Valley goes north of the Alvarez Mountains, and along Valshni Wash and Fresnal Wash, which carry this drainage, are

numerous temporales. The corresponding summer rancherías are Vamori and Burro Pond, east of the Alvarez Mountains; Kavolik, north; Rocky Point, south; and San Rafael, west. Vamori has a permanent water supply from the Indian Service well and pumping plant and is connected by roads with San Miguel (11 miles), Fresnal (14 miles), Topahua (7 miles), and Indian Oasis (14 miles). Burro Pond is 3 miles from Vamori and is connected with it and Topahua by a maze of roads. Kavolik is 8 miles northwest of Vamori. From this village it is 10 miles to Indian Oasis, 7 miles to Big Fields, and 14 miles to Tonukvo. (See log on p. 396.) Rocky Point is 6 miles southwest of Vamori and 14 miles by direct road from San Miguel. San Rafael is 4 miles northwest of Rocky Point. It may also be reached from Vamori by going north of Alvarez Mountain 11 miles.

West of Alvarez Mountains is a group of temporales and summer rancherías which center around Tecolote midway between the last-named mountains and the north end of the Sierra La Lesna. Tecolote is on the road from Casa Grande to Pozo San Luis. (See p. 371.) It is 16 miles from Indian Oasis. A road also runs from Tecolote around the north end of the Sierra La Lesna into Mexico. The other temporales are connected by a maze of roads with each other, with Tecolote, with two wells in the Sierra La Lesna, and with Kavolik, San Rafael, and Rocky Point. Roads from these temporales join the Casa Grande-San Luis road and thus provide for travel from these places to Cobota and San Luis in Sonora.

ROADS NORTH AND SOUTH FROM INDIAN OASIS.

Indian Oasis (Sells post office) was founded by Joseph Meneger, who dug the first well and who for many years conducted a store and trading post at this place. At first because of the store and now because of Government buildings and schools, this locality has long been a center for travel in the Papago country. The following paragraphs review the routes leading out of Indian Oasis:

From the Geological Survey sign east of Meneger's store a road goes north 1.4 miles across the arroyo and between fences to a fence corner and fork. The left fork goes west to Big Fields (for log see p. 344); the right fork goes northwestward about 4 miles toward some sharp red hills to a fork on the far side of an abandoned well. At this fork the left-hand road continues northwest 9½ miles to Kvitatk, a summer ranchería on the Casa Grande–Pozo San Luis road. (See p. 371.) A number of crossroads lead from Big Fields to Nolic. The total distance from Indian Oasis to Kvitatk is 15 miles. The right-hand road at the fork by the abandoned well goes north 6 miles to Nolic, where there are three dug wells, and 7 miles to Santa Cruz, where there are three dug wells. Wickchoupai, where there is a dug well, is 1½ miles south of Santa Cruz. There are doubtless roads between these rancherías that are not shown on the map.

The Golden Age mine is 4½ miles north of Artesa Pond. From Indian Oasis go east from the Geological Survey sign 2 miles on Tucson-Yuma road (see p. 336) and turn north on the east side of the pond.

Roads lead south from Indian Oasis on both sides of Artesa Mountains. The western roads are reached by going west on the Tucson-Yuma road (see p. 336) 1.5 miles to a double road fork with Geological Survey sign. The right-hand road going west is the Tucson-Yuma road. The middle road is the Indian Oasis-Menegers Dam road. (See p. 394.) The left-hand road forks almost immediately, the left fork going east to James Well, 4.7 miles from Indian Oasis, and continuing from James Well across the mountains to the eastern

part of Topahua, 10 miles from Indian Oasis; the right fork continues along the west base of Artesa Mountains 4.6 miles to a crossroad. By keeping to the left the western temporales of Topahua are reached 9.5 miles from Indian Oasis, and by continuing south and avoiding crossroads Vamori is reached 14 miles from Indian Oasis.

On the east side of the Artesa Mountains two roads go southeast from Artesa Pond, 2 miles east of Indian Oasis on the Tucson-Yuma road. (See p. 336.) Either road will do provided the traveler turns sharply south at the point of the mountains 2½ miles from Artesa Pond. A maze of roads intersect here. Select the best traveled and go southeast 6 miles to the eastern part of Topahua, where connections are made with the numerous roads of the Baboquivari Valley. (See p. 392.)

MISCELLANEOUS ROUTES BETWEEN QUIJOTOA MOUNTAINS AND GUNSIGHT PASS.

INDIAN OASIS TO MENEGERS DAM (42.9 MILES).

[See p. 395 for log in opposite direction.]

To go from Indian Oasis to Menegers Dam follow the Tucson-Yuma route by the southern road to Big Fields for 10.4 miles to the represo south of Big Fields. (For log see p. 336.)

0.0 Indian Oasis.

10.4 Big Fields. Represo on left of road, **usually dry.** On west side of corral which is just west of represo turn southwest. Road for next 4.4 miles was not run, and mileages are measured from map.

12.3 Fork. Take right-hand road.

13.3 Crossroads. Keep straight on. This is road from Iron Pipe to Tecolote. (See p. 371.)

14.8 Crossroads. Keep straight on. This is road from Tonukvo to Kavolik. See p. 396.)

15.5 Mesquite thicket. Mesquite in orchard-like groves along this road for several miles.

23.4 Reverse fork. Road from Copeka comes in here. (See p. 395.) Rocky hill on right.

24.6 Cross small sand dune.

25.6 Fork. Keep to right past rocky hill smaller than the last and proceed over sandy plain. On south side of this hill is a charco which has **water for a short period after rains.** The road on left goes to Serventi Well (1.3 miles). It is **impossible to obtain water from this well.**

33.4 Reverse fork. Road from Comovo comes in on right. (See p. 397.)

33.8 Camote. Summer ranchería. There is a large, horseshoe-shaped represo 400 feet across the base and inclosed in a brush fence. Behind the dam, and in the charco which it is intended to improve, **water remains for several months after a rain.** The locality is very sandy, and cattle obliterate wagon tracks. To go to Menegers Dam proceed north of the represo and slightly north of west over sandy plain. From Camote a road goes southeast to **Susuta** and thence to other points in Sonora, Mexico. Go on south side of corral passing boundary monument 156 on the left over very sandy road. **Susuta** is a pond in the sand dunes about 500 feet wide, and is **dry only in very dry years.**

35.0 Scattered mesquite trees.

39.4 Top of low divide between the Great Plain and La Quituni Valley. A charco called "Charco de Conejos" lies near this divide. From this point the road swings slightly to the north toward the west end of Nariz Mountains, through scattered, orchard-like groves of mesquite.

42.9 Menegers Dam. Water collects in the borrow pit of this uncompleted dam for several months after a rain. (See p. 400.)

MENEGERS DAM TO INDIAN OASIS (42.9 MILES).

[See pp. 394–395 for log in opposite direction.]

0.0 Menegers Dam. Go slightly north of east, then east, through groves of scattered mesquite trees.

2.5 Divide between La Quituni Valley and the Great Plain. A charco called "Charco de Conejos" lies near this divide.

7.9 Leave scattered mesquites and go over sandy, treeless plain

9.1 Camote. Summer ranchería. Pass charco and represo on right, houses on left, to corral. **Water in the represo for several months after a rain.** Very sandy, and roads usually obliterated by cattle tracks. Turn to left (northeast) at Corral. Road to south of corral goes to **Susuta** (2.5 miles).

9.5 Fork. Take right-hand road; left-hand road leads to Comovo. (See p. 397.)

17.3 Reverse fork on east side of little rocky hill; charco on south side of hill which **has water for a short time after rains.** Road from right comes from Serventi Well (1.3 miles). **No water.**

18.3 Cross small sand dune.

19.5 Fork on east side of rocky hill. Keep to right. Mesquite in orchard-like groves along this road for several miles. Road to left goes northeast to Copeka. (See p. 395.)

27.4 End of mesquite thickets.

28.1 Crossroads. Keep straight on. This is road from Tonukvo to Kavolik. (See p. 396.)

29.6 Crossroads. Keep straight on. This is road from Iron Pipe to Tecolote. (See p. 371.)

30.6 Reverse fork.

32.5 Represo on south side of Big Fields. Turn east at corral and go between represo and fences. (For details see log on p. 343.)

42.9 **Indian Oasis.**

COPEKA TO SERVENTI WELL (8.9 MILES).

[See p. 396 for log in opposite direction.]

0.0 Copeka. (For other roads from Copeka see pp. 336, 343, 396.) Go west from hill on north side of represo, crossing adobe wash, and then go southwest toward gap between hill called "Chewetun" and main part of Copeka Mountains. An old road will be found which is badly washed but hard and easily traveled.

3.3 Top of divide. Go down alluvial slope into adobe flats with salt bushes and some drifted sand.

6.8 Rocky hill on right in mesquite-covered adobe flats.

7.9 Reverse fork. Road from **Indian Oasis** comes in on left. **For log see pages 394–395.**

8.1 Fork on east side of small rock hill. Turn to left. Road on right goes to Camote. (For log see p. 398.) There is a charco on the south side of this hill, which **holds water for some time after rains.**

8.9 **Serventi Well.** Small house and well with drilling rig on place. Usually **impossible to obtain water,** because no one lives here and there is no adequate apparatus.

SERVENTI WELL TO COPEKA (8.9 MILES).

[See pp. 395–396 for log in opposite direction.]

0.0 **Serventi Well.** Go northeast to rocky hill.
0.8 Reverse fork on east side of hill. Turn to right
1.0 Fork. Turn to left and go through adobe flats to gap in Copeka Mountains.
2.1 Rocky hill on left.
5.6 Top of divide. Turn to right toward Copeka, easily visible after crossing the divide.
8.9 Copeka. (For roads from Copeka see pp. 336, 343.)

COPEKA TO KAVOLIK BY WAY OF TONUKVO (16.3 MILES).

[See below for log in opposite direction.]

0.0 Copeka. Summer ranchería. Represo and large pond, in which **water will be found for several months after rain.** (For other roads out of Copeka, see pp. 336, 343, 395.) From small sandy hill and corral go west and turn south on west side of pond and thence go southeast over good road, which is very muddy when wet.
2.6 Tonukvo. Summer ranchería. Represo and large pond, in which **water will be found for several months after rain.** Turn on north side of represo and go south of east over good desert road.
5.7 Crossroads. Continue straight on. This is road from Indian Oasis to Menegers Dam. (See p. 394.)
7.8 Fork. Keep to right. Left-hand road goes to Big Fields.
8.0 Crossroads. Continue southeast. This road is from Casa Grande to San Luis, Mexico. (See p. 371.)
9.3 Temporal on right.
13.7 North end of temporal. Turn to right (south) on east side of field. Reverse fork; here road comes in from Big Fields (6 miles).
14.6 Crossroads. Continue on. This is road from Indian Oasis to Tecolote.
15.8 Complex crossroads in outskirts of Kavolik. Turn to left to represo.
16.3 Kavolik. Summer ranchería. Represo and large pond.

KAVOLIK TO COPEKA BY WAY OF TONUKVO (16.3 MILES).

[See above for log in opposite direction.]

0.0 Kavolik. Summer ranchería. Represo and large pond. Go southwest from represo.
0.5 Complex crossroads. Turn north.
1.7 Crossroads. Continue north on east side of temporal. This is road from Indian Oasis to Tecolote.
2.6 North end of temporal and fork. Take left-hand road around end of temporal and then go north of west. The right-hand road goes to Big Fields (6 miles).

7.0 Temporal on left.
8.3 Crossroads. Continue north of west. This is road from Casa Grande to San Luis, Mexico. (See p. 371.)
8.5 Reverse fork. A road from Big Fields comes in.
10.6 Crossroads. Continue straight on. This is road from Indian Oasis to Menegers Dam. (See p. 394.)
13.7 Tonukvo. Turn on north side of represo and go north on west side of adobe flat.
16.3 Copeka. Come in on west side of represo and turn to right to small sand hill and corral. (For roads out of this place, see pp. 336, 343, 395.)

POZO BLANCO TO PISINEMO (11.1 MILES).

[See below for log in opposite direction.]

0.0 **Pozo Blanco.** From well at corrals go southwest between the scattered houses toward south side of big lava-covered hill.
2.2 Southern point of hill.
2.7 Cross big wash, then go southward along alluvial slope on west side of Quijotoa Mountains, crossing numerous washes, over fair plains road.
4.3 Faint road on right.
9.4 Faint road on left.
9.5 Fork. Keep to right.
10.6 Reverse fork.
11.1 Pisinemo. Small represo on right. **No permanent water.** (For logs of roads from Pisinemo see pp. 337, 343, 348–349.)

PISINEMO TO POZO BLANCO (11.1 MILES).

[See above for log in opposite direction.]

0.0 Pisinemo. Go northeastward, keeping small represo on left.
0.5 Fork. Turn to right.
0.6 Faint road on right. Turn eastward and then north, following along alluvial slope parallel to Quijotoa Mountains, crossing numerous washes, over fair plains road.
6.8 Faint road on left.
8.4 Cross big wash and go on east side of large lava-capped hill.
8.9 East point of hill, thence between the scattered houses of Pozo Blanco to well.
11.1 **Pozo Blanco.** (For logs of roads from Pozo Blanco see pp. 345–347, 388–389.)

COMOVO TO CAMOTE (14.6 MILES).

[See p. 398 for log in opposite direction.]

0.0 Comovo. Go west from church and turn south on east side of corral into Comovo Valley on east side of Mesquite Mountains.
1.5 Fork. Keep to left.
1.8 Fork. Keep to left. These forks go to west side of fields.
2.3 Go between fences. Houses of temporal of Comovo on right.
2.7 Pass end of fence on left.
4.1 Mesquite Charcos on left about 0.4 mile. These charcos extend along the arroyo for some distance and are likely to have **water for one or two months after rains.** A faint road branches off on right toward gap in Mesquite Mountains north of Mamatotk Mountain.

9.0 Southerly point of Mesquite Mountains on right. Come into adobe flat, where road is likely to be obliterated after rains. A trail comes in on northwest from **Mesquite Tank** (6 miles). The so-called tank is probably a spring and the **water is permanent.** It is 3 by 3 by 7 feet long and is in a cave in the face of a white cliff, near a very green mesquite tree easily visible from Camote. A horse can drink from the tank but must back out of the cave. Charcos are said to exist along the trail about 1½ miles from the point of the mountains. Near this point also a road is said to lead off on the right directly to Menegers Dam.

12.1 The plain is covered with drifted sand from here to Camote.

13.4 Reverse fork. Road from **Indian Oasis** comes in on left. (See p. 394.)

14.3 Camote. Keep to right of corral and go west.

14.6 Represo and charco of Camote. **Water here for 2 or 3 months** after rain unless a great deal has been used by stock. (For road out of Camote see pp. 394–395.)

CAMOTE TO COMOVO (14.6 MILES).

[See p. 397 for log in opposite direction.]

0.0 Camote. From represo go east to corral.

0.3 Corral. Turn northeast with corral on right.

1.2 Fork. Take road on left; road on right goes to **Indian Oasis.** (See p. 394.)

2.5 End of sand; road shortly runs into adobe flat where tracks are obliterated during rains. Go toward gap between Mesquite Mountain and hills on right.

5.6 Southerly point of Mesquite Mountain on left. (See above for roads and trails from this point.)

10.5 Mesquite Charcos on right (two-fifths of a mile). Faint road on right leads toward gap in Mesquite Mountain.

11.9 Fence corner on right. Go north between fences of temporal of Comovo.

12.3 End of fences, house on the left. Go north toward Comovo, visible from this point.

12.8 Reverse fork.

13.1 Reverse fork.

14.6 Represo and charco of Camote. **Water here for 2 or 3 months** after

CHARCO EN MEDIO TO CUBO (7.5 MILES).

[See p. 399 for log in opposite direction.]

The road from Charco en Medio to Cubo is little used but is easily traveled with all kinds of vehicles. The nearest permanent water is a well near a prospect 2 miles west of Charco en Medio. A little-traveled but passable road leads from Charco en Medio past this well to Walls Well, 7 miles.

0.0 Charco en Medio. Go south between represo and corral toward pass in hills. **Water in represo for only a short time after rains.**

1.4 Reverse fork; road comes in on right.

2.1 Top of divide. Go down slope toward easterly point of Cubo Hills.

4.2 Cross numerous washes for next quarter of a mile.

6.1 Reverse fork.

6.2 Reverse fork.

7.5 Cubo. Pass corral on right to charco, which holds **water only for short time after rains.** At this point reach Cubo route of Tucson–Yuma road. (See p. 348.)

CUBO TO CHARCO EN MEDIO (7.5 MILES).

[See p. 398 for log in opposite direction.]

0.0 Cubo. Leave charco and go north on east side of corral and small field, keeping Cubo Hills on left.
1.3 Fork. Keep to left.
1.4 Fork. Keep to right.
3.1 Cross numerous washes for next quarter of a mile, then enter granite hills and go up gentle grade.
5.4 Top of divide. Go down slope into basin in Gunsight Hills.
6.1 Fork. Turn to right.
7.5 Charco en Medio. Represo on right, corral on left. Reach Tucson–Yuma road (p. 334) in front of houses.

WALLS WELL TO MENEGERS DAM AND MEXICO.

From Walls Well roads lead through the pass into the Barajita Valley and thence south along the east side of the Ajo Mountains to the Mexican border in the vicinity of Menegers Dam.

WALLS WELL TO MENEGERS DAM BY WAY OF COCHIBO (27.2 MILES).

[See p. 401 for log in opposite direction.]

0.0 **Walls Well.** Winter ranchería; **well**; about 10 houses. **Miller's ranch** is a quarter of a mile west of the ranchería. He has two wells; there is a **greater supply of water** and it is **more sanitary.** From Walls Well take right-hand road.
1.0 Reverse fork. Geological Survey sign. Come into Cubo route of Tucson–Yuma road (see p. 348) and follow it for 7.5 miles.
1.2 Cross rocky gap.
1.6 Faint road on right. This road leads to **Barajita,** winter ranchería, where there are **two wells** (6 miles). Keep to left along eastern part of Barajita Valley for Cubo and Menegers Dam. Road on left goes to Cubo. (See p. 348.)
7.0 Fork. Geological Survey sign. Keep on south. Road on left goes to Cubo.
7.3 Rocky hillock on right; then cross wash.
7.5 Crossroad. This is one of numerous roads from Cubo to **Barajita,** not shown on map.
8.5 Fork. Keep straight on south. Road on right goes to **Barajita** (6 miles).
9.3 Faint road on right.
9.6 Charcos on left common for next mile.
10.4 Corral on left and just south of it represo. This is new represo on site of old charco. **Water** probably lasts only a **few days after rain.** Faint roads go off in various directions near the represo. A trail said to be passable for wagons leads southwestward through a gap in Cubo Hills to Charco Colorado (6 miles). For Cochibo continue south with hills on left.
11.1 Charcos on left.
13.9 Fork. Keep to right. Road on left goes through gap in hills to Charco Colorado (2.8 miles). It is a good road for automobiles and, for persons not desiring to go by way of **Cochibo,** it is the best route to Menegers Dam from this point.
14.1 Reverse fork of same road.

14.3 Charco on right.
14.5 Turn southwest onto gravel benches.
16.4 Reverse fork. Turn to right up narrow canyon for water; by keeping to the left 0.8 mile will be saved on total distance to Menegers Dam.
16.5 Corral and Papago houses on right.
16.8 **Cochibo.** Winter ranchería with two wells; **good water but should be boiled.** (See Pl. XXVI, *A*.) The principal Indian here is José Manuel, and the well is sometimes known by his name. A horse trail leads from this place to **Sonoita,** Sonora. Return down canyon.
17.2 Fork. Same as mile 16.4. Turn to right, keeping along base of mountains toward gap at south end of Barajita Valley.
21.0 Out of hills; bear south toward gap between Nariz and Ajo mountains.
24.4 La Quituni. Summer ranchería; two houses; **usually no water here** except immediately after rains, when charcos are full. Numerous roads; keep temporal on right and bear to left to strike road from Charco Colorado, which lies east of drainage line.
25.0 Reverse fork. Road from Charco Colorado comes in on left.
26.7 Marin's represo; out of repair and **will not hold water.** From a point near Marin's represo a road goes southwest over a pass in the Cerros de Angostura called "Garambullo" into the Santa Rosa Valley to Santa Rosa, Sonora.
27.2 Menegers Dam. The dam is an earthen embankment across a gap in the Cerros de Angostura, still in process of construction in 1917. In the borrow pit **water collects after rains and remains for several months.** From this point roads lead south on the east side of the Nariz Mountains to **Nariz,** Sonora; east to Camote and **Indian Oasis** (see p. 395), and northeast to Mesquite Charcos and Comovo. (See p. 398.)

WALLS WELL TO MENEGERS DAM BY WAY OF CUBO AND CHARCO COLORADO (27.2 MILES).

[See pp. 401–402 for log in opposite direction.]

0.0 **Walls Well.** Follow same route as given in log of road by way of **Cochibo.** (See p. 399.)
7.0 Fork. Geological Survey sign. Turn to left into gap in the Cubo Hills and follow between fields to east end of gap.
9.4 Cubo. Charco on right; **water for only a short period after rains.** Houses and corral on left. Continue east. Road to Charco en Medio goes north on east side of corral. (See p. 399.)
9.9 Double fork. Geological Survey sign. Take right-hand road and turn south around point of hill; middle road goes to Comovo (see p. 350); left-hand road goes to Pisinemo (see p. 348). Go south in valley between Mesquite Mountains and Cubo Hills. The road from Cubo to Charco Colorado was not run, and distance is given as measured on map.
17.9 Charco Colorado. Summer ranchería, two houses on little hillock, pass to the left of them. **No permanent water.** Road comes in on right from Barajita Valley; it is 2.9 miles to Walls Well-Cochibo road. (See p. 399.)
18.2 Fork. Keep to right; road to left goes to temporal.
18.5 Temporal on left.
19.3 Temporal on left.
20.1 Charcos on right of road.
22.3 Faint road on left.

24.3 Numerous crossroads and forks for next mile. Head toward right-hand notch in hills ahead and then turn to left toward left-hand notch.
26.7 Marin's represo. (See p. 400.)
27.2 Menegers Dam. (See p. 400.)

MENEGERS DAM TO WALLS WELL BY WAY OF COCHIBO (27.2 MILES).

[See pp. 399–400 for log in opposite direction.]

0.0 Menegers Dam. Go northwest along base of hills.
0.5 Marin's represo.
1.2 Numerous crossroads and forks in next mile.
2.2 Fork. Turn to left to temporal; right-hand road goes by way of Charco Colorado.
2.8 La Quituni. Summer ranchería; two houses; **usually no water here except immediately after rains.** Numerous forks and crossroads.. Go north toward gap between Ajo Mountains and Cubo Hills.
6.2 Enter gap; keep along western side.
10.0 Reverse fork. Turn left up narrow canyon.
10.1 Corral and Papago houses on right.
10.4 **Cochibo.** Winter ranchería with two wells; **good water but should be boiled.** Return down canyon.
10.8 Fork. Same as mile 10. Turn to left over gravel benches.
12.7 Turn north along adobe flat.
12.9 Charco on left.
13.1 Fork. Keep to left; road on right goes through gap to Charco Colorado (2.9 miles).
13.3 Reverse fork of same road.
16.8 Corral on left and just south of it represo. (See p. 399.) Charcos on right of road common for next mile.
16.9 Faint road comes in on left.
18.7 Fork. Keep straight on. Road on right goes to **Barajita** (6 miles). (See p. 399.)
19.7 Crossroad. This is one of numerous roads from Cubo to **Barajita,** not shown on map.
20.2 Fork. Geological Survey sign. Avoid turn to right, which goes to Cubo (see p. 348), and go northwest toward north end of Ajo Mountains.
25.6 Faint road comes in on left; this road comes from **Barajita** (6 miles).
26.0 Cross rocky gap.
26.2 Fork. Geological Survey sign. Take left-hand roads; right-hand road goes to **Gunsight ranch.** (See p. 348.)
27.2 **Walls Well.** Winter ranchería; **well** and about 10 houses. **Miller's ranch,** a quarter of a mile west, **has better water.**

MENEGERS DAM TO WALLS WELL BY WAY OF CHARCO COLORADO (27.2 MILES).

[See pp. 400–401 for log in opposite direction.]

0.0 Menegers Dam. Go northwest along base of hills.
0.5 Marin's represo.
1.2 Numerous crossroads and forks in next mile.
2.2 Fork. Turn to right toward gap between Mesquite Mountains and Cubo Hills. Left fork goes to temporal and summer ranchería of La Quituni.
4.9 Faint road on right.
7.1 Charcos on left of road.

7.9 Temporal on right.
8.7 Temporal on right.
9.0 Reverse fork. Road on right comes from temporal.
9.3 Charco Colorado. Summer ranchería; two houses on little hillock. **No permanent water.** Pass to right of houses and go between Mesquite Mountains and Cubo Hills. Road from this point to mile 17.3 was not run, and distance is given as measured on map. From Charco Colorado, just south of houses, a road goes northwest through a gap in Cubo Hills 2.9 miles to road from Cochibo to Walls Well. It is probably the best route from this point to **Walls Well.**
17.3 Double reverse fork. Geological Survey sign. Turn to left around point of hill into gap at Cubo. Comovo route (see p. 349) joins Cubo route (see p. 348) at this point, and the road described in this log is identical with them.
17.8 Cubo, charco on left; **water for only a short period after rains.** Houses and corral on right. Go west through gap, with field on left, and then between fields. Road to Charco en Medio goes north on east side of corral. (See p. 399.)
20.2 Reverse fork. Geological Survey sign at west end of gap. The remainder of log is identical with that of road from Menegers Dam to Walls Well by way of Cochibo. (See p. 401.)

ROUTES FROM AND NEAR AJO.

AJO TO YUMA BY THE CAMINO DEL DIABLO (152.7 MILES).

[See pp. 406–408 for log in opposite direction.]

This road goes from Ajo to Bates Well and then follows in a general way the route of the Camino del Diablo, the old route from Altar and Caborca in Sonora by way of Sonoita to California. The difficulties and dangers of this route are much less than in the early days, owing to the drilling of Papago Well and the digging of Tule Well. Travelers, however, should make careful inquiry as to the condition of the road, the presence of adequate equipment at Papago Well, and of water at Tinajas Altas. Travelers by automobile must be prepared to camp and make road repairs and should carry a liberal allowance of gasoline and oil. A shortage of either will entail a long walk, for neither can be procured between Ajo and Wellton, a distance of 115 miles.

0.0 **Ajo.** Go west from railroad station and turn southwest and then south.
1.0 Go under railroad trestle. Fork. Take left-hand road, as right-hand road is likely to be bombarded with rocks when blasting is done in the open cuts of the New Cornelia mine, which lies to the right.
1.2 Old Ajo. Most of the buildings of the old settlement were burned several years ago.
1.6 Reverse fork. Alternate road comes in on right, also fork. Keep to right (south). Road on left goes over Reservoir Hill.
2.3 Double fork. Keep straight on. Right-hand road goes to **Cardigan** (2.1 miles). Left-hand road to **Darby Well** (1.1 miles).
2.4 Fork. Keep to right (south). Road goes left to **Darby Well.**
2.6 Cement Tank. A rock tank lies 100 feet to right in the arroyo. It is improved with a concrete dam and holds water for several months after rain. The water is usually filthy and not fit to drink. Cross arroyo and go south.

3.7 Reverse fork. Road comes in on left from **Darby Well** (1.4 miles). Go south with Black Mountain on left.

5.3 Wood road on left.

5.8 Wood road on left.

7.1 Fork. Geological Survey sign. Keep to right toward pass in Growler Mountains. Road on left goes to **Sonoita**, Sonora, Mexico. (See p. 410.)

16.6 **Bates Well.** Geological Survey sign. This is the east well; the newer west well is three-tenths of a mile west and has better water. It is 21 miles to next watering place and 52 miles to absolutely dependable water. From the Geological Survey sign go slightly north of west, keeping north of west well and wire fence over sandy road to rocky pass. (For other roads out of Bates Well see pp. 412–413.)

17.7 Top of pass; Yellow Jacket mine on left.

17.9 Growler mine on left and house on right. Go west across Growler Valley toward north end of Agua Dulce Mountains over fair but little-traveled desert road.

30.6 Fork at foot of ragged granite hills. Geological Survey sign. Keep to right. The left-hand road goes to Papago mine and Papago Well by way of Steel Tanks. It is about the same length as the right-hand road and some travelers prefer it.

31.6 Go between granite hills.

33.2 Go around point of hill.

39.3 **Papago Well.** Geological Survey sign. Drilled well on north side of large arroyo, black hill just south. There was in 1920 a tripod and pulley erected over the well. Water was obtained by means of a steel cable drawn through a pulley and attached to a sand pump, the sand pump being lowered to water at a depth of 235 feet, filled through a valve at the bottom, and pulled out by attaching the cable to an automobile. (See Pl. XXVI, *B*.) A single horse or two men could pull out the sand pump when full, but it is doubtful if a man alone could obtain water. From the well a road goes east 1.5 miles to Papago mine, easily visible against the side of a small mountain, thence by way of Steel Tanks to the fork at mile 30.2. A road also goes north on the west side of Mohawk Mountains 52.5 miles to Mohawk. (See pp. 339, 340.) No dependable water on this route. To follow the old Camino del Diablo go west.

40.0 Cross arroyo which passes Papago Well; very deep sand. (See Pl. XVI.) Go west just north of spur of mountains toward gap in O'Neills Hills.

43.3 O'Neills Pass. Arroyo on right. Grave of Dave O'Neill on right of road, marked by pile of stones and wooden cross. Go west out of pass down alluvial slope toward Las Playas. Pinta Mountains north and scattered hills south.

45.4 Fork. Go west. Left-hand road goes to Batamote and Las Positas, watering places on Sonoita River in Mexico.

48.0 Las Playas. Hard-baked clay surface, with small mesquite bushes around border. During and after rains there is a shallow lake here. If it drains at all it drains to Mexico. **Water will be found for several weeks after rains in charcos along the southwestern border.** All variations of the Camino del Diablo route passed through Las Playas and from this place the modern route is practically identical with the old one.

49.4 End of playa. Start up sandy slope toward low mesa on west. This sandy slope is the most difficult part of the road for low-powered automobiles. From this point there is an old trail and road to **Heart Tank** in the Pinta Mountains. This distance is about 14 miles, and the road is impassable for automobiles because of heavy drifted sand.

49.7 Palo Verde Tree. A tree on left side of road with shelves fitted in the branches and with advertising signs tacked on it. It is a well-known landmark. From this point to the top of the mesa the sand is very deep.

50.6 Edge of Pinacate plain. Good mesa road for next 5.6 miles.

56.2 Go down mesa over heavy drifted sand.

57.0 End of sand. Go west toward gap in mountains ahead. Plains road soft and badly washed.

59.3 Automobile tracks on right (north). These tracks were made by Tremaine in 1916 when he succeeded in getting within 1.5 miles of **Heart Tank** by automobile. He went northeast 4.5 miles, passing three-quarters of a mile west of small volcanic cone, and then turned and followed center of valley for about 4 miles more. Thus he avoided the drifted sand along the southern end of Pinta Mountains. **Heart Tank** is located 4.5 miles north of very prominent geologic contact, plainly visible from the Camino del Diablo, which divides the blackish gneisses and schists of the south end of the mountains from the pinkish-white granite of the north end. **Heart Tank** consists of a pothole in a stream channel high up on the side of the mountain. At certain water levels the water surface has the conventional heart shape, hence the Spanish name Tinaja de Corazón. It is probably never dry, but mountain sheep sometimes drown in it and thus pollute the water. There is said to be another tank on the east side of Pinta Mountains, but its location is uncertain.

64.3 Entrance to pass.

66.5 Turn to right over hills; very rough and rocky road.

66.8 Turn to left downhill into open valley and then turn north. County signboard near this last turn.

69.9 **Tule Well,** located just north of large arroyo among small rocky hills. There is a new well with a plank curb just south of old well, from which no water can be obtained. The ruins of an adobe house lie 100 feet north. There is usually a bucket and rope at the new well, but travelers should carry their own, to provide against contingencies. **The water is salty but not dangerous to the health.** A road goes east from **Tule Well** about 3.5 miles to a prospect and there turns northeast and goes on the east side of the Cabeza Prieta Mountains. About half a mile from the prospect is a very deep arroyo which is extremely difficult for automobiles to cross. By this road it is 12 miles from Tule Well to a wooden county sign which says, "9 miles to Tule Well." From this sign it is 9 miles to **Cabeza Prieta Tanks,** where water will be found except in very dry seasons. It is also about 14 miles from this sign to **Heart Tank.** (See p. 416.) The Camino del Diablo goes west from **Tule Well** over some low hills into an open valley.

71.7 Avoid tracks on left which lead to prospect.

72.1 County sign: "Tule Well 2 miles."

72.6 Tracks on left.

72.9 Tule Tank. Geological Survey sign at entrance to small cove in steep mountain on right of road. Tule Tank is 1,600 feet on left up narrow canyon. It consists of a rock basin about 6 feet in diameter at base of dry falls and is usually full of sand. Water is found in the sand for some time after rains. **Not permanent.**

73.5 Reverse fork. Faint roads come in on left from narrow pass south of valley between lava-capped hills and very high peak. It is said that this road can be followed by automobile for 20 miles.

74.3 Fork. Turn to left (west) out of narrow pass into small open valley and strike northwest toward pinkish-white conical peak and black-capped mountain. Road on right goes north in narrow pass. It is said to go to Cabeza Prieta Tanks.

77.9 Turn west in pass betwen pinkish-white conical peak and lava plateaus on the south. Go down valley and then turn to right onto gravel bench.

78.9 Gravel bench. Very large black boulders; road rough but hard.

79.4 Go down off bench and strike west across Lechuguilla Desert. Road soft and in places badly washed.

83.2 Fork. County signs. Take left-hand road; right-hand road goes to Coyote Water (4.5 miles). Water can be obtained at this locality by digging in the sand of the arroyo about 4 feet. The water has an unpleasant taste, probably because of decaying roots.

88.7 Reverse fork. Road comes in on left. It leads from points in Mexico near Papago Tanks. In about 2 miles it becomes very difficult for automobile travel.

88.9 Reverse fork. County sign. Road comes in from Coyote Water (3.4 miles). Travelers by automobile from Tinajas Altas to Coyote Water should stop on west side of axial arroyo of valley unless compelled to cross, as arroyo is 100 feet wide and has very deep sand. Water is found about 100 feet north of crossing.

89.6 **Tinajas Altas.** Geological Survey sign. Water will be found in a series of tanks in a very steep stream channel or dry falls 500 feet west of sign. The lowest tank is commonly full of sand, and water will be found by digging in sand. The second and third tanks are best reached by turning to left (south), where a steel cable will be found, up which it is easy to climb the smooth rock face. The upper tanks are difficult to reach, and it can perhaps best be done by taking trail to right and climbing to "window" and then going down to canyon above the falls. The **water lasts all year,** but the lower tanks are sometimes exhausted by travelers. If so, climb to upper tanks and pour water down channel to fill lower ones. The water is palatable but there are usually dead bees in it. Occasionally mountain sheep slip and fall into the tanks and contaminate the water. Travelers will find road from Geological Survey sign up arroyo to tanks very difficult for automobiles, and are advised to camp on gravel bench west of sign. To go to Yuma proceed north from sign.

90.2 Fork. Keep to right along west side of Lechuguilla Desert. Road to left goes through pass in mountains and follows west side of Gila Range to **Fortuna mine** and thence by way of Blaisdell to **Yuma.** It is about 25 miles to Fortuna mine. The road is very difficult for automobiles.

96.2 Reverse fork. County signs. Road comes in on right from Coyote Water (7 miles).

96.7 Crossroad. Continue north. This road runs from Copper Mountain to Raven Butte Tank, a small tank with uncertain water in a canyon southwest of Raven Butte, about 3 miles from this crossroad.

97.5 Fork. Take right-hand road toward gap in Wellton Hills. Left-hand road is an old road largely abandoned, which strikes railroad near Ligurta.

100.2 Enter hills; various faint roads go off to prospects in these hills. Keep on main traveled road.

104.0 Out of hills. Wellton visible to north. Follow main traveled road by way of small house.

115.7 Cross railroad track.

115.8 **Wellton.** Geological Survey sign. Post office, **water,** hotel, garage, gasoline. From Wellton take Tucson-Yuma road to Yuma. (See p. 339.)

133.0 **Dome.**

153.0 **Yuma.**

YUMA TO AJO BY THE CAMINO DEL DIABLO.

[See pp. 402–406 for log in opposite direction.]

0.0 **Yuma.** Follow Yuma-Tucson road. (See p. 340.)

13.3 Blaisdell. From this station a road crosses railroad to **Fortuna mine** (see p. 416) and thence to **Tinajas Altas.** Road from Fortuna mine to Tinajas Altas is very difficult for automobiles. Turn north and follow macadam road.

37.2 **Wellton.** Geological Survey sign. (See p. 402 for preparations necessary for this trip.) Go south from post office.

37.3 Cross railroad tracks and bear to right up slope with very deep drifted sand toward small house.

48.0 Enter Wellton Hills; various faint roads go off to prospects in these hills. Keep south on main traveled road.

53.1 Out of hills; go south along west side of Lechuguilla Desert.

55.5 Reverse fork. Old road, largely abandoned, comes in on right from Gila Valley near railroad station of Ligurta.

56.3 Crossroads. Continue south. Raven Butte Tank 3 miles west. (See above.)

56.8 Fork. County signs. Road to left goes to Coyote Water (7 miles).

62.8 Reverse fork. Road from Blaisdell and Fortuna mine comes in on right.

63.4 **Tinajas Altas.** Geological Survey sign. Permanent water in rock tanks. (See p. 405.) From Geological Survey sign go south to point of cove and then southeast.

64.1 Fork. Take right-hand road across Lechuguilla Desert toward pass between conical pinkish-white mountain and low dark plateaus. This conical mountain is just south of black-capped mountain. Left-hand road goes to Coyote Water (3.4 miles). (See p. 405.)

66.0 Fork. Keep to left. Road on right goes south toward Papago Tanks in Mexico. It becomes very difficult for automobiles 2 miles south.

69.8 Reverse fork. Road comes in from Coyote Water (4.5 miles). (See p. 405.)

73.6 Go up gravel bench; very large boulders; road rough but hard.

74.1 Go down off bench and turn to left (east) to pass.

75.1 Turn to right (southeast) in pass into little valley and go toward very narrow opening in granite hills.

78.7 Reverse fork. Turn to right (south) in pass. Road on left is said to lead from **Cabeza Prieta Tanks.**

79.5 Fork, at turn out of narrow pass into open valley. Keep to left (east) along northern border of valley. Road on right goes south across valley to narrow pass between lava-capped hills and high peak. It is said that this road can be followed by automobiles for 20 miles.

80.1 Tule Tank. Geological Survey sign. **Water not permanent.** (See p. 405.)

80.4 Tracks on right.

80.9 County sign, "Tule Well 2 miles."

81.3 Avoid tracks on right going to prospect and go through small hills to another open valley.

83.1 **Tule Well. Permanent water.** (For other roads from this well see p. 404.) Go south from well across arroyo.

86.2 Turn to left near county signboard uphill and then to right over very rough and rocky road.

87.5 Turn to left (east) in narrow pass.

88.7 Out of pass. Go east across plain over soft plains road badly washed.

93.7 Automobile tracks on left (north). (See p. 404.)

96.0 Deep drifted sand to top of mesa.

96.8 Edge of Pinacate plain. Good mesa road for next 5.6 miles.

102.4 Go down from mesa through very deep drifted sand.

103.3 Palo Verde Tree. A tree on right side of road with shelves fitted in the branches and with advertising signs tacked on it. Sandy road to playa.

103.6 Las Playas. Beginning of playa. (See p. 403.)

105.0 End of playa. Go east up alluvial slope toward gap in O'Neills Hills, Pinta Mountains to north, scattered hills on right.

107.6 Reverse fork. (See p. 403.)

109.7 O'Neills Pass. Arroyo on left. Grave of Dave O'Neill on left of road, marked by pile of stones and wooden cross. Go east toward scattered hills at north end of Agua Dulce Mountains.

113.0 Cross to north side of arroyo; very deep sand.

113.7 **Papago Well.** Geological Survey sign. **Water permanent, but apparatus to obtain it may be missing.** (See p. 403 and Pl. XXVI, *B*, for information. For alternate road and road to **Mohawk** see same page.) Go northeast.

119.8 Turn to right around point of hill and go southeast.

121.4 Between granite hills.

122.4 Reverse fork. Geological Survey sign. Alternate road comes in on right. (See p. 403.) Go east across plain over fair but little-traveled desert road to gap in Growler Mountains.

135.1 Growler mine on right, house on left. Go over hill.

135.3 Top of little pass; Yellow Jacket mine on right. Go southeast into valley.

136.4 **Bates Well.** Geological Survey sign. This is east well; the newer well is three-tenths of a mile west and has the better water. From the sign go northeast through pass.

145.9 Reverse fork. Geological Survey sign.

147.2 Wood road comes in on right.

147.7 Wood road comes in on right.

149.3 Fork. Keep to left. Right-hand road goes to **Darby Well** (1.4 miles).

150.4 Cement Tank. (See p. 402.)

150.6 Reverse fork. Road on right leads from **Darby Well** (1.1 miles).

150.7 Double reverse fork. Road on right comes from **Darby Well**; road on left comes from **Cardigan** (2.1 miles).
151.4 Fork. Keep to right, as alternate road on left is likely to be bombarded by rocks when blasting is done in open cuts of New Cornelia mine on left. Also reverse fork; road from left goes over Reservoir Hill. Keep north toward railroad trestle.
151.8 Old Ajo.
152.0 Go under railroad trestle and follow main traveled road into town.
153.0 **Ajo.**

AJO TO POZO REDONDO AND PERIGUA (33.8 MILES).

[See p. 409 for logs in opposite direction.]

The roads from Ajo to Pozo Redondo go through the gap between the Batamote and Pozo Redondo mountains. The plateaus of these ranges are separated by a small circular mesa easily seen from Ajo. The roads join and go between this mesa and the Pozo Redondo Mountains—that is, through the southern passageway of what appears at a distance to be a double gap. The log is given by way of Childs ranch. The other road is of practically the same length and somewhat easier to travel. It starts near the rear of Sam Clark's house, just north of the main street at Clarkstown.

0.0 **Ajo.** Follow Tucson road. (See p. 340.)
0.3 Geological Survey sign. Turn to right.
1.0 **Clarkstown.**
2.1 Fork. Keep to left.
2.4 Fork. Keep to left; right-hand road goes to **Gunsight ranch and Tucson.**
5.1 **Childs ranch** and slaughterhouse. **Deep well** and pumping plant; **good water.** Turn to left and go north along arroyo. A road, little used, goes from this ranch directly south 2 miles to Gunsight road, and another southeast 7 miles to the same road.
5.7 Fork. Turn sharply to right across arroyo with steep clay banks. Road straight ahead on west side of arroyo is seldom used and connects with abandoned Gaskill road. On crossing arroyo come into a maze of roads made by wood haulers. Head toward gap.
8.4 Reverse fork. Well-marked road comes in on left. This road is direct route into **Ajo.**
10.1 Drift fence in gap; go through gate. Keep to right; left-hand road goes 3.4 miles to new well of Tom Childs.
11.4 Rocky hill on right. Arroyo on left.
12.8 Turn to right around rocky point and cross wash. Go south in Pozo Redondo Valley.
15.6 Small rocky hill on right.
16.4 Fork. Turn sharply right across large arroyo.
16.6 **Pozo Redondo.** Winter ranchería. **Old well; good water, which should be boiled.** New well being dug a quarter of a mile north. From **Pozo Redondo** a little traveled but good road leads south 8 miles to **Gunsight ranch.** Road to Perigua goes east from **Pozo Redondo;** recross the arroyo to fork (mile 16.4).
16.8 Fork. Go south between houses and turn southeast. Follow east border of Pozo Redondo Valley.

22.1 Charco de la Piedra. Road passes among some small outliers of mesa and loose boulders. In these is the charco, which does **not hold water for more than a few weeks after rain.** Turn northeast to cross rocky ridge. Other roads lead from Charco de la Piedra to Gunsight ranch (6 miles), to Charco en Medio (9 miles), and to Charco de la Lomita (5 miles). These roads are little used but are easily passable except in wet weather. From Charco de la Lomita a road strikes across Quijotoa Valley, crosses tip of Sierra Blanca, and goes down east side of mountain to **Covered Wells,** a distance of 27 miles. By way of Charco de la Piedra it is then 37 miles from **Pozo Redondo** to **Covered Wells.**

23.3 Crest of ridge. Go down and cross little valley to gap.

25.8 Crest of gap is an open adobe flat with mesquite trees. Small charco on the eastward-flowing drainage.

29.4 Fork. Take right-hand road toward isolated hill in plain, avoiding many crossroads and forks.

33.8 Perigua. Summer ranchería. Two houses and some shelters on east side of isolated hill; **no permanent water.** Small charcos and fields on flat to east. (For roads through Perigua see pp. 377–380, 388–389.)

PERIGUA TO POZO REDONDO AND AJO (33.8 MILES).

[See pp. 408–409 for log in opposite direction.]

0.0 Perigua. Summer ranchería. **No permanent water.** Go south from houses on hillside with fences on left.

0.7 Turn to right through maze of crossroads. Take best traveled road toward gap in mountains southwest.

4.4 Reverse fork.

8.0 Crest of gap in open adobe flat with mesquite trees. Small charco east of crest. Turn southwest into little valley and cross rocky ridge.

10.5 Crest of ridge. Go downhill and turn northwest.

11.7 Charco de la Piedra. Road passes among some small outliers of the mesa and loose boulders. In these is the charco, which **does not hold water for more than a few weeks after rain.** Turn northeast and go along border of Pozo Redondo Valley. (For other roads see above.)

17.0 Reverse fork on far side of houses. Turn sharply to left and cross arroyo.

17.2 **Pozo Redondo. Permanent water in well.** Return to fork and go north. (For road to **Gunsight ranch** see p. 408.)

18.0 Small rocky hill on left.

21.0 Cross wash and turn to right around rocky point into gap.

22.4 Rocky hill on left, arroyo on right.

22.0 Out of gap. **Ajo** visible across Valley of the Ajo.

25.4 Fork. Take left-hand road; right-hand road goes direct to **Ajo;** about the same distance; generally in better condition, but no water.

28.1 Cross arroyo; steep clay banks.

28.2 Fork. Turn sharply to left toward **Childs ranch.** Well tower visible. Right-hand road goes north and connects with abandoned Gaskill road.

28.8 **Childs ranch.** Turn to right at well.

31.4 Reverse fork. Road from **Tucson** and **Gunsight ranch** comes in on left. (See pp. 334–338 for detailed log.)

31.7 Reverse fork.

32.8 **Clarkstown.**

33.5 Geological Survey sign. Turn to left across railroad.

33.8 **Ajo.**

AJO TO SONOITA (42 MILES).

[See p. 411 for log in opposite direction.]

The common route to Sonoita at the present time branches from Ajo-Bates Well road 7 miles out of Ajo and goes south on west side of Black Mountain. An old road branches from the Ajo-Gunsight ranch road east of Black Mountain, but this road is now practically abandoned.

0.0 **Ajo.** Go west from railroad station and turn southwest and then south.

1.0 Go under railroad trestle. Fork. Take left-hand road, as right-hand road is likely to be bombarded with rocks when blasting is done in open cuts of New Cornelia mine, which lies on right.

1.2 Old Ajo. Most buildings of old settlement were burned several years ago.

1.6 Reverse fork. Alternate road comes in on right. Also fork. Keep to right (south). Road on left goes over Reservoir Hill.

2.3 Double fork. Keep straight on. Right-hand road goes to **Cardigan** (2.1 miles), left-hand road to **Darby Well** (1.1 miles).

2.4 Fork. Keep to right. Road on left goes to **Darby Well.**

2.6 Cement tank. A rock tank 100 feet to right, in arroyo. It is improved with concrete dam and holds water for several months after rain. The water is usually filthy and not fit to drink. Cross arroyo and go south.

3.7 Reverse fork. Road comes in from **Darby Well** (1.4 miles). Go south with Black Mountains on left. Locomotive Peaks on right.

5.3 Wood road on left.

5.8 Wood road on left.

7.1 Fork. Geological Survey sign. Keep to left. **Road on right goes to Bates Well** and **Yuma.** (See p. 402.)

16.2 Crossroads. Geological Survey sign. Continue south; east-west road goes from **Bates Well** to **Walls Well.** (See p. 412.) **Nearest water is Bates Well** (5 miles).

18.4 Cherioni Well on right, about 50 yards on south side of arroyo. This well is usually dry.

21.0 Fork. Geological Survey sign. Keep to left. Right-hand road goes 1.7 miles to second fork, whence left-hand road goes to **Dripping Spring,** a permanent spring under a white gap called Puerto Blanco. This spring is 5.5 miles from mile 21.0. The right-hand road is a rough and little-used route to **Cipriano Well.** (See p. 413.)

25.1 Fork. Keep to left. Road to right crosses arroyo and goes to Milton, Levy, and Martinez camp (8 miles).

27.3 Reverse fork. Enter pass in low hills. Road comes in on left which goes through Copper Mountain mine to Bates Well-Walls Well road, approximately 11 miles.

29.5 Go through gate in drift fence.

29.8 Top of pass. Go down alluvial slope into Sonoita Valley.

33.1 Out of pass.

36.7 Fork. Keep to left. Faint road on right.

37.7 **Blankenship Well** at international boundary. **Well on right with good water,** house on left; boundary monument 167 west of well. There is also a well on the Mexican side of the line. From **Blankenship Well** it is 2 miles in an air line to **Sonoita,** Sonora, Mexico. The distance by road is probably greater and is usually called 5 miles. This distance is used on the signboards. From **Blankenship Well** there is an old road practically abandoned to the ruined smelter at

Dowling and thence to **Quitobaquito.** A trail also goes northwest by way of **Bullpasture,** a small but permanent spring, across the Ajo Mountains to **Cochibo.**

42.0 **Sonoita. Wells, springs,** and **water in Sonoita River.** At this town there is usually a commissioner and customs officer of the Mexican Government. During the recent civil war the town has been continually occupied by troops of one or the other faction.

SONOITA TO AJO (42 MILES).

[See pp. 410–411 for log in opposite direction.]

0.0 **Sonoita.** It is 2 miles in an air line from Sonoita to **Blankenship Well.** The road is somewhat longer and is usually called 5 miles. This distance is used on the signboards.

4.3 **Blankenship Well,** on north side of gate at international boundary. **Well** on left with **good water;** house on right. Boundary monument 167 west of well. There is also a well on the Mexican side of the line.

5.3 Reverse fork. Go up alluvial slope to gap in hills. Faint road comes in on left.

8.9 Beginning of pass in low hills.

12.2 Top of pass.

12.5 Go through gate in drift fence and down narrow valley between low mesas.

14.7 Fork at north end of pass. Keep to left; right-hand road goes through Copper Mountain mine to Bates Well–Walls Well road (11 miles).

16.9 Reverse fork. Road comes in on left across arroyo from Milton, Levy, and Martinez Camp (8 miles).

21.0 Reverse fork. Geological Survey sign. Road comes in on left from **Dripping Spring** (5.5 miles). This road forks 1.7 miles out, and the right fork is a rough and little-used road to **Cipriano Well.** (See p. 413.)

23.6 Cherioni Well on left about 50 yards, on south side of arroyo. This well is usually dry.

25.8 Crossroads. Geological Survey sign. Continue north. East and west road goes from **Bates Well** to **Walls Well.** (See p. 412.) **Nearest water Bates Well** (5 miles).

34.9 Reverse fork, Geological Survey sign. Road comes in on left from **Bates Well** and **Yuma.**

36.2 Wood road on right.

36.7 Wood road on right.

38.3 Fork. Keep to left toward gap in hills. Road on right goes to **Darby Well** (1.4 miles).

39.4 Cement Tank. (See p. 402.)

39.6 Reverse fork. Road on right comes from **Darby Well.**

39.7 Double reverse fork. Right-hand road comes from **Darby Well** (1.1 miles); left-hand road comes from **Cardigan** (2.1 miles).

40.4 Fork. Keep to right, as left-hand road is likely to be bombarded with rocks when blasting is done in open cuts of New Cornelia mine, which lies to left (west). A road goes east from this point over Reservoir Hill.

40.8 Old Ajo.

41.0 Reverse fork. Go under railroad trestle and follow main traveled road into Ajo. Alternate road comes in here.

42.0 **Ajo.**

WALLS WELL TO BATES WELL (17.4 MILES).

[See below for log in opposite direction.]

0.0 **Walls Well.** Winter ranchería of about nine houses. **Dug well near corrals.** Water 19 feet from surface; no bucket. Travelers will obtain more and better water at **Miller's ranch.** Drilled wells near by supplied part of water for Gunsight mine. One mile east is Tucson-Yuma road. (See p. 348.) Go west through gate.

0.1 **Miller's ranch. Two dug wells and windmill.** From this ranch a road and trail go to **Alamo Well,** which has water most of the year and thence there is a trail to Horse Tanks; uncertain water. Go west.

1.1 From this point an old and almost obliterated road goes north to join the road from **Jaques ranch** to **Lewis Well.**

5.0 Faint road on south goes to Copper Mountain mine and thence to Sonoita road. (See p. 410.)

9.7 Crossroads. Continue west. This is old Sonoita road, which leaves the Gunsight road east of Black Mountain. (See p. 410.)

12.4 Crossroads. Geological Survey sign. This is Ajo-Sonoita road, mile 16.2. Continue west into mesquite thicket. Road sometimes obliterated by cattle tracks.

15.6 Faint road comes in on left near entrance to pass. By this road it is 3.3 miles to Cherioni Well.

17.4 **Bates Well.** Geological Survey sign. This is the east well. **Better water will be obtained at the west well,** 0.3 mile west. (For other roads from Bates Well see pp. 403, 407, and below.)

BATES WELL TO WALLS WELL (17.4 MILES).

[See above for log in opposite direction.]

0.0 **Bates Well.** Geological Survey sign. The best water is at the west well, three-tenths of a mile west. Roads often obliterated by cattle tracks. Go southeast along north bank of arroyo into gap southeast of Bates Well.

1.8 End of gap. Go east in mesquite thicket. Near this point a faint road goes off to Cherioni Well (3.3 miles).

5.0 Crossroads. Geological Survey sign. Continue east. This is Ajo-Sonoita road, mile 16.2.

7.7 Crossroads. Continue east. This is old Sonoita road, which leaves the Gunsight road east of Black Mountain. (See p. 410.)

12.4 Faint road comes in on right (south) from Sonoita road through Copper Mountain mine. (See p. 410.)

16.3 From this point an old and almost obliterated road goes north to join the road from **Jaques ranch** to **Lewis Well.**

17.3 **Miller's ranch. Two dug wells and windmill.** Travelers will find more and better water here than at Walls Well. Go east through gate.

17.4 **Walls Well.** Winter ranchería of about nine houses. **Dug well near corrals,** water 19 feet from surface; no bucket. It is 1 mile from this well to the Tucson-Yuma road. (See p. 348.)

BATES WELL TO QUITOBAQUITO (19.8 MILES).

[See p. 413 for log in opposite direction.]

0.0 **Bates Well.** Geological Survey sign. This is the east well. More and better water will be found at the west well. **(For other roads from** Bates Well, see pp. 403, 407, and above.)

0.3 **West well.** Turn south across sandy arroyo and then southwest.
0.4 Go through gate.
0.8 Go through gate.
2.4 Faint road on left (south).
6.5 Powers Well on right; dry, no water. Go south into succession of narrow valleys between low mesas.
14.5 Reverse fork. Keep to left. Right-hand road goes out into Growler Valley toward Agua Dulce Mountains.
14.6 **Cipriano Well.** Dug well; slightly brackish water. In very dry seasons this well has little water.
14.8 Uncompleted well on right. Go southeast to gap.
15.5 Divide.
15.9 End of gap. Go south along western border of La Abra Plain. Faint road on northeast comes in from Ajo-Sonoita road. (See p. 410.)
19.0 Road on right goes over hill into **Quitobaquito.** It avoids going into Mexico but is badly washed.
19.1 **Aguajita. Water** will usually be found in the arroyo here.
19.3 Turn west around hills. Faint road goes southeast along boundary line.
19.4 Boundary monument 172 on little hill to right.
20.0 **Quitobaquito.** Several springs in little basin in granite hills at south end of Quitobaquito Hills. The springs, which have **permanent flow of good water,** are in the United States; the pond, field, and most of the houses are in Mexico. Since the revolution in Mexico the Papagos who formerly lived at Quitobaquito have moved away.

QUITOBAQUITO TO BATES WELL (19.8 MILES).

[See p. 412 for log in opposite direction.]

0.0 **Quitobaquito.** Go southeast from houses on Mexican side of line. A road northeast through gap is wholly in American territory but is badly washed.
0.4 Boundary monument 172 on little hill to left.
0.5 Turn north. Faint road goes southeast along boundary line.
0.7 **Aguajita. Water** will usually be found in the arroyo here.
0.8 Road on left comes in from **Quitobaquito.** It is badly washed.
3.9 Enter gap. Faint road on northeast comes in from Ajo-Sonoita road. (See p. 410.)
4.3 Divide. Go down into open small valley.
5.0 Uncompleted well on left.
5.2 **Cipriano Well.** Dug well; slightly brackish water. In very dry seasons this well has little water.
5.3 Fork. Keep to right through succession of narrow valleys between low mesas. Road on left goes to Growler Valley and toward the Agua Dulce Mountains.
13.3 Powers Well on left; dry. Go northeast toward gap in hills.
17.4 Faint road comes in on right.
19.0 Go through gate.
19.4 Go through gate.
19.5 **West well** at Bates Well. Turn to right.
19.8 **Bates Well.** Geological Survey sign. Well on right is the old well. More and better water will be obtained from the west well. (For roads from Bates Well see pp. 403, 407, 412.)

ROADS NEAR THE LITTLE AJO MOUNTAINS.

Roads near the Little Ajo Mountains are shown on the map in some detail. The region has, however, been the site of almost continuous prospecting for many years. Consequently there are many old and abandoned roads, as prospecting develops a well-traveled road within a week, which in turn may be abandoned as quickly. An almost continuous road encircles the mountains, and many of the other roads may be considered as branches of it. Reverse log is not given.

0.0 **Ajo.** Go north and west.

0.6 **Gibson.** A suburb of Ajo. **Several dug wells,** hotel, and stores.

0.7 Fork, outskirts of Gibson. Take left-hand road west and then northwest. Right-hand road joins Ajo-Gila Bend road at mile 2.9. It is a very rough road.

2.5 Fork. Small wooden signboard. Left-hand road goes half a mile to fork. There is a small wooden signboard here also. Right-hand road goes half a mile to **Cook & Landro Well,** a dug well on west side of an arroyo in a little valley. This well has water throughout the year. Left-hand road goes 1 mile to **Steele Well,** a dug well said to have water throughout the year. Right-hand road at the fork (mile 2.5) goes northwest around north base of small hill at mile 3.6 and then west to gap at south end of Childs Mountain.

5.7 **Well.** A dug well, 16 feet to water, permanent throughout the year. No equipment. Turn left across arroyo and go southwest and then southeast on road skirting mountains.

8.9 Reverse fork. Road comes in on right from **Tule Well.** A dug well, with a windmill and near-by small rock tank. **The water is permanent.** Tule Well is seven-tenths of a mile distant. From this fork go east up arroyo into pass north of Ajo Peaks. This part of the road is practically impassable for automobiles.

12.2 Double reverse fork. Left-hand road comes in from **Cardigan,** a mine and **well** 0.3 mile distant. There is usually at least a caretaker and sometimes a few miners on the property. Formerly a few Papago families lived here. Right-hand road comes in from **McNeils Well,** half a mile distant. This well was dug as a prospect hole and is not a very reliable water supply. The same road is used to get to a number of prospects in the vicinity of Ajo Peaks. There is a sand tank in the arroyo about four-tenths of a mile southwest of this fork. The tank holds water for several months after rain. Go east.

13.3 Wood road comes in on right. A horse trail to Bates Well also leaves at this place.

13.7 Double reverse fork. Road on left from Cement Tank (see p. 402) and road on right from a prospect.

14.0 Reverse fork on road from Bates Well and Sonoita into Ajo. (See pp. 402, 410.)

16.3 **Ajo.**

MINOR ROADS WEST OF AJO.

ROADS IN AND ADJACENT TO SAN CRISTOBAL VALLEY.

The San Cristobal Valley lies between the Mohawk Mountains on the west and the Aztec Hills and Aguila Mountains on the east. In the valley and adjacent to it are a number of roads, and such information as is available concerning them is given in the following paragraphs.

From Stoval, a section house on the railroad 206.4 miles from Tucson and 66.5 miles from Yuma on the Tucson-Yuma road, a road goes south 3.8 miles to Pimeria Well, a deep well, from which, however, travelers can not obtain water, because there is no apparatus. Then the road goes to **Garcia Well,** 8 miles from Stoval, a dug well which has a windmill and a depth to water of 46.3 feet. The well had only 8 inches of water in 1917 but was being deepened. **The water is brackish but potable.**

From **Garcia Well** the road continues straight south up the valley for 8.5 miles, where it forks and a road on right leads to **Whites Well**—a dug well. From the fork the road continues south to **Papago Well,** going between the Granite and Mohawk mountains. The total distance from Stoval to Papago Well by this road is not less than 41 miles, but nothing is known as to the exact location or characteristics of this road, except that it is very little used and that water is found only at the places mentioned above.

The ordinary route from the railroad to Papago Well goes south from Mohawk on the west side of the Mohawk Mountains. Mohawk is a station of the Southern Pacific Railroad 213.9 miles from Tucson and 59 miles from Yuma, on the Tucson-Yuma road. The road goes through a great deal of drifted sand south of Mohawk and is a difficult journey 52.5 miles long. There is no permanent water, but water is found at times in rock tanks in a cove on the west side of the Mohawk Mountains, 15 miles from Mohawk, at Glynns Falls. East of the Mohawk Mountains a road goes south through the Red Cross mine, 5 miles from the railroad. This road connects with the Mohawk–Papago Well road through a pass in the mountains marked by three hills. North of this pass on the east side of the mountains is a rock tank in which water lasts for only a short time. On the south side of the pass is an old mine.

The old Yager road from Ajo to Yuma was used in freighting ore from the copper mines of Ajo to tidewater at Yuma in the years following the Civil War. There were probably several variations in route, but the principal road crossed San Cristobal Valley. From Garcia Well a dim track goes southeast toward the Aguila Mountains. As seen from this point the mountains consist of a northern part which is blackish in color, flat-topped, and slopes to the northeast, a central part which consists of a series of high jagged reddish peaks, and three isolated hills stringing off to the southwest. The road goes between the largest and most northerly of these hills and the jagged peaks and thence strikes across the plain for the north end of the Growler Mountains. From the pass in the Aguila Mountains roads lead on either side of the mountains to two sets of tanks, Eagle Tanks on the east side and Don Diego Tanks on the west side. Eagle Tanks is considered a reliable watering place. The Yager road has been traveled by at least two parties in automobiles in recent years. Both parties were composed of very experienced travelers and they report that the old road is virtually obliterated and marked only by a somewhat taller and greener growth of creosote bushes. By way of Stoval and Garcia Well the route presents no difficulties which could not be overcome by a small amount of work and more traffic. This route may eventually supplant the Ajo-Yuma road by way of Sentinel.

Eagle Tanks are commonly reached from Aztec, a station on the Southern Pacific Railroad. The road crosses the railroad track and goes southeast. About 1 mile from Aztec there is a fork and a road goes southwest through the Aztec Hills and then diagonally across San Cristobal Valley to join the road from Stoval to Papago Well, about 18 miles south of Stoval. This road has been used within the last two or three years and is a fair desert road.

The left-hand road continues southwest, to join the Yager road near the southern end of the Aguila Mountains. At 16 miles from Aztec a trail leads off to the right to **Eagle Tanks,** which are about half a mile west of the road. These tanks are usually considered a reliable watering place, but they have been visited so seldom in the last few years that little information is available. E. L. Jones, jr., states that the tanks consist of seven potholes 5 to 6 feet deep and 4 to 5 feet wide in a deep and narrow stream channel.[7]

WELLTON TO BAKER TANKS AND POINTS SOUTH.

0.0 **Wellton.** Go east from post office and cross railroad east of station, then go south along west side of wire fence. Barand's house and **well** on left.
0.4 Turn to left (east) at fence corner; sandy road
0.7 Turn to right (south).
1.2 Turn to left (east).
1.4 Fork. Keep to left in a generally easterly direction over very poor road toward Baker Peaks. Road on right goes on west side of the Copper Mountains to various prospects. No permanent water. Travelers should consult local people in Wellton before using this road.
8.0 Fork. Turn left to windmill. Road on right goes south on east side of Copper Mountains to various prospects and continues to **Cabeza Prieta Tanks.** Travelers should consult local people in Wellton before using this road.
8.2 **Baker Tanks.** A number of tanks distributed in the bed of a deep and rocky arroyo for 1,000 feet northwest from the windmill. Water will be found here throughout the year. If much is used by stock, it may be necessary to dig in the sand near the windmill; usually the potholes 70 feet west of the windmill have the best drinking water.

BAKER TANKS TO WELLTON.

0.0 **Baker Tanks.** Go west from windmill.
0.2 Take right-hand road. (For road on left (south) see above.)
6.8 Reverse fork. (For road on left (south), see above.)
7.0 Turn to right (north).
7.5 Turn to left (west).
7.8 Turn to right (north) at fence corner, sandy road, Barand's house and **well** on right. Cross railroad and turn west on north side to Wellton post office.
8.2 **Wellton.**

BLAISDELL TO FORTUNA MINE (13.8 MILES).

From Blaisdell, a station on the Southern Pacific Railroad, a road runs south along the west side of the Gila Mountains to Fortuna mine. This road is kept in condition for automobile travel by the caretaker at Fortuna mine.

0.0 Blaisdell. This place is 13.3 miles from Yuma on the Tucson-Yuma road. The nearest water is **Imperial Well,** three-quarters of a mile northwest over a sandy road. Go south through gate and cross railroad. Follow well-marked road over coarse gravelly benches.

[7] Personal communication.

13.8 **Fortuna mine**, in canyon on west front of mountains. The mine hoist and mill still stand; most of the town is in ruins. Water is obtained from the mine shaft and from prospect holes which are used as cisterns. Two are east up the canyon; the third is four-tenths of a mile southwest.

From **Fortuna mine** a road goes on the west side of the mountains and crosses through a pass to **Tinajas Altas.** The distance is about 26 miles, but the road is very difficult for automobile travel. A road also goes northwest to Araby and thence to **Yuma.** It is so sandy that it is abandoned for the somewhat longer route by way of Blaisdell.

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Abra ranch.—Plate XXV. A ranch three-quarters of a mile north of Tucson-Yuma road and 5 miles northeast of Robles ranch, now used simply as a stock-watering place. There is a deep well and pumping plant.

Adamsville.—See Clements ranch.

Agua Cercada Spring.—Plate XXV. A spring on the west side of Cobre Ridge, 3½ miles southeast of Jarilla Spring.

Agua de Arieta.—Plate XXV. A spring 2 miles northeast of Canoa ranch in T. 22 S., R. 9 E.

Agua Dulce.—Plate XXIII. A watering place in Sonora, Mexico, 7 miles by a rough road west of Quitobaquito. Water is usually found flowing in the bed of Sonoita River and can always be obtained by digging.

Aguajita.—Page 360; Plate XXV. Near Buenos Aires.

Aguajita.—Page 413; Plate XXIII. Half a mile east of Quitobaquito.

Agua la Vara.—Plate XXV. A spring and well, used for watering stock, 1¼ miles southwest of Alamo, from which it is reached by a trail.

Agua Salada.—Plate XXIII. A watering place in Sonora, Mexico, 5 miles or perhaps only 3 miles southwest of Agua Dulce. Water is obtained by digging in the sand of the channel of Sonoita River

Agua Sardina.—Plate XXV. A small spring and north of it a dug well on the southwest slope of Sardina Mountain at the head of Agua Sardina Canyon, 5 miles southeast of Papalote ranch. The seep and well will water 250 to 300 head of cattle.

Aguirre.—Plate XXV. A ranch and presumably a well 10 miles northeast of Santa Rosa ranch.

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Ajo Mountains, tanks south of.—Plate XXIV. Rock tanks in an arroyo leading southwest in gently rolling rocky country 6½ miles northeast of Blankenship Well and 6 miles southeast of Horse Tanks. The tanks are seldom visited.

Akchin.—Page 377; Plate XXIV. Three miles south of Maricopa.

Akchin.—Plate XXIV. A summer ranchería 2 miles southeast of Santa Rosa. No permanent water.

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Alamo Well.—Plate XXIV. A dug well on the west side of the Ajo Mountains about 10 miles by trail from Miller's ranch. It is used by Mr. Miller as a stock-watering place.

Aliso Spring.—Plate XXV. A stock-watering place on east slope of Sardina Mountain, 5 miles west of Tubac. This spring will water 300 to 450 head of cattle.

Allison reservoir.—Plate XXV. A reservoir 2 miles southeast of Ventana impounded by a masonry dam. It was constructed to supply water for the Allison mine but is now used as a stock-watering place.

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Ancient represo.—Plate XXV. A represo 4 miles southwest of Indian Oasis on road to Kavolik. It is unlikely that it has any value as a water supply for travelers.

Androdas ranch.—Plate XXV. A ranch on Queen Creek in sec. 20, T. 2 S., R. 7 E. A well 113 feet deep is located here.

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Anvil ranch.—Page 355; Plate XXV.

Arivaca.—Page 358; Plate XXV.

Arivaca ranch.—Page 358; Plate XXV.

Arivaca ranch, well south of.—Plate XXV. Two wells used for watering stock along Arivaca Creek south of Arivaca ranch.

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Armenta ranch.—Page 371; Plate XXV. Five miles south of Chiu-Chuschu. There is a well at this ranch.

Aros ranch.—Plate XXV. A ranch on east side of Baboquivari Mountains 6 miles west of Buenos Aires; has a water supply consisting of a dug well and a tunnel in rock.

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Artesa Pond.—Page 336; Plate XXV.

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Atascosa Mountain, spring south of.—Page 359; Plate XXV.

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Avenenti ranch.—Plate XXV. This ranch is shown on the township plat. It is about 11 miles from Picacho by road and 15 miles from Florence. The kind of water supply is not known.

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B. & B. ranch, well west of.—This well is shown on the township plat.

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Barajita Valley, charcos in.—Page 349; Plate XXIV. A number of charcos are located along the road from Walls Well to Cochibo. None are of any great value to travelers.

Batamote.—Plate XXV. A locality at which it is presumed that water may be obtained.

Batamote Mountains, tank in.—Plate XXIV. A rock tank on the northern border of the mountains southeast of a temporal, 2½ miles east of Geological Survey sign at railroad crossing north of Batamote Well.

Batamote Well.—Also called Tenmile Well. Page 338; Plate XXIV.

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Bates Well trail charcos.—Plate XXIV. Charcos 5½ miles north of Bates Well, in an adobe flat between Growler Mountains and outlying hills. A horse trail from Old Ajo to Bates Well passes by them. They hold water for several weeks after rain.

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Canoa ranch.—Plate XXV. A ranch located in T. 22 S., R. 9 E., less well known than a ranch of the same name in Santa Cruz Valley. There is a dug well.

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Casa Blanca.—Plate XXV. An Indian village on south bank of Gila River 10 miles west of Sacaton. Wells and irrigation ditches are numerous in the vicinity.

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Charco de la Piedra.—Page 409; Plate XXIV.

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Diablito Spring.—Plate XXV. A small spring on north slope of Diablito Mountain 5½ miles east of Moyza, which will water 100 to 150 head of cattle.

Dobbs Butte, represo east of.—Plate XXV. A represo 1 mile south of the Tucson-Yuma road and 3 miles east of Dobbs Butte. It holds water for about one month after rains.

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Durham ranch.—Page 361; Plate XXV. An American cattle ranch; presumably water can be obtained at all times.

Eagle Tanks.—Page 415; Plate XXIII.

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Florence, wells near.—Plate XXV. Wells are numerous in and near the town and at the ranch houses in the bottom lands of Gila River. Some of these wells were noted along the road to Casa Grande (see p. 369) and Casa Grande Ruins (see p. 365) and are located on the map (Pl. XXV).

Foreman ranch.—Plate XXV. An American cattle ranch; presumably water can be obtained at all times.

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Fresnal.—Page 392; Plate XXV. Eighteen dug wells are scattered for 4 miles along Fresnal Canyon in the west slope of the Baboquivari Mountains; not the same as Fresnal Canyon in the Tumacacori Mountains.

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Gold Mine Mountain, ranch north of.—Plate XXV. A ranch in sec. 34, T. 2 S., R. 7 E.; has a well and windmill.

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Green's canal and reservoir.—Plate XXV. This system was built to divert flood water from Santa Cruz River and store the water for irrigation. It is not a dependable water supply for travelers.

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Gunsight road charcos.—Plate XXIV. Charcos 4 miles south of Childs ranch and about a mile south of the Tucson-Yuma road. They hold water for short periods after rains and are used largely by loose stock and wood haulers.

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Heaton.—Page 375; Plate XXIV. No water.

Hendricks Wells.—Plate XXV. Four dug wells 3 miles south of San Miguel Wells.

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Horse Tanks.—Plate XXIV. Tanks 4 miles south of Alamo Well in an arroyo flowing north. Stock are likely to consume the water within a short time after rains.

Imperials Well.—Page 339; Plate XXIII.

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Indian Well.—Plate XXV. Well 2 miles east of the State Highway between Florence and Phoenix, 140 feet deep.

Iron Pipe.—Page 372; Plate XXIV.

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Isabella mine, well 2 miles north of.—Plate XXIV. On road from Copperosity to Isabella mine. No information about this well is available.

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Jalisco ranch.—Plate XXV. This ranch, 6 miles east of Arivaca, in T. 21 S., R. 11 E., has a dug well equipped with a horse pump.

Jaques ranch.—Page 337; Plate XXIV.

Jarilla Spring.—Page 359; Plate XXV.

Jaynes.—Page 366; Plate XXV.

Jenkins.—Page 359; Plate XXV.

Jeowic.—Plate XXV. A summer ranchería with fields and small represo about half a mile north of the Tucson-Yuma road and 2 miles west of Fresnal ranch.

Juan Encinas.—Plate XXV. This seep, 3 miles east of Tres Bellotas, has water only in wet seasons, at which times it will supply 60 head of cattle.

Kaka, charco 6 miles west of.—Plate XXIV. On road to Perigua.

Kaka, charcos near.—Plate XXIV.

Kavolik.—Page 396; Plate XXIV.

King Well.—Page 355; Plate XXV.

Komalik.—Page 392; Plate XXV.

Komatke.—Page 381; Plate XXIV.

Ko-opke.—Page 371; Plate XXV.

Kukomalik.—Page 371; Plate XXV.

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La Alina.—Plate XXV. A dug well and stock-watering place in the cove between the Coyote and Quinlan mountains in T. 17 S., R. 8 E.

La Lesna Mountains, wells in.—Plate XXIV. Two dug wells in a narrow valley between a subsidiary ridge and the main ridge of the mountains. The north well is 150 feet deep and 50 feet to water, and the south well is 32 feet deep and 4 feet to water.

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Las Jarillas Well.—Plate XXV. A stock-watering place half a mile south of San Luis ranch in T. 21 S., R. 9 E. There is a dug well and windmill.

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Leon ranch.—Plate XXV. A stock-watering place on east side of Baboquivari Mountains, 9 miles west of Palo Alto, in Tps. 17 and 18 S., R. 8 E. There is a represo.

Leon ranch, spring northwest of.—Plate XXV. A spring on east side of Baboquivari Mountains, 1½ miles northwest of Leon ranch, in T. 17 S., R. 8 E.

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Ligurta.—Plate XXIII. Siding on Southern Pacific Railroad, 10 miles west of Wellton. The section house is off the road, but in emergencies water can be obtained from cistern.

Lirim.—Plate XXV.

Lockas ranch.—Page 367; Plate XXV.

Lopez ranch.—Page 361; Plate XXV.

Lopez Well.—Plate XXV. A well and store just north of the international boundary, 9½ miles southeast of San Miguel.

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Magdalena.—Page 392; Plate XXV.

Maricopa.—Page 375; Plate XXIV.

Maricopa-Covered Wells road, sand tank on.—Page 377; Plate XXIV.

Maricopa Wells.—Plate XXIV. A locality near the Santa Cruz Cienega, where there is water close to the surface. Shallow wells were here when the place was used by early travelers as a watering place.

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Martinez ranch.—Page 359; Plate XXV.

McNeils Well.—Page 414; Plate XXIV.

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Menegers Dam.—Page 400; Plate XXIV.

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Mesquite Charcos.—Two miles of temporal of Comovo. Page 397; Plate XXIV.

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Mesquite Tank.—Page 398; Plate XXIV. On southwest side of Mesquite Mountains 6 miles from Camote–Comovo road.

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Mineral Hill.—Page 353; Plate XXV.

Mirandon Well.—Plate XXV. In Altar Valley 1 mile south of Lopez ranch.

Mirandon Well, well south of.—Plate XXV. A dug well a mile south of Mirandon Well.

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Moreno ranch.—Page 359; Plate XXV.

Mowepa.—Page 388; Plate XXIV.

Moyza.—Page 359; Plate XXV.

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Nelson Well.—Plate XXV. A well 1½ miles south of Santa Cruz River and 7 miles west of Rillito in T. 11 S., R. 10 E.

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Nogales.—Page 352; Plate XXV.

Nogales, spring west of.—Plate XXV. This spring is 5½ miles west of Nogales, as shown on map of Mexican Boundary Survey. No other information is available.

Noipokam.—Plate XXIV. Winter ranchería and dug well 3 miles north of Brownell on road from Quajote to Brownell.

Nolic.—Page 372; Plate XXV.

Northline Trading Post.—Plate XXV. A store and well on boundary of Gila River Reservation in sec. 34, T. 2 S., R. 5 E. It is 1½ miles west of Casa Grande-Phoenix road by way of Sacaton (p. 368).

Nunez.—Page 368; Plate XXV.

Oceanic mine.—Plate XXV. This mine is 1¾ miles east of San Luis ranch and has a water supply derived by pumping from San Luis Canyon.

Old Quijotoa Well.—Page 372; Plate XXIV.

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Otero ranch.—Plate XXV. A stock-watering place on east side of Baboquivari Mountains in T. 18 S., R. 8 E. There is a well and represo.

Pacheco Well.—Plate XXV. A well on south bank of Santa Cruz River 3 miles west of Rillito, in T. 12 S., R. 11 E.

Palo Alto.—Page 355; Plate XXV.

Palo Verde ranch.—Plate XXV. An American cattle ranch; presumably water can be obtained at all times.

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Peak Water tunnel.—Plate XXV. A stock-watering place of the La Osa Land & Cattle Co., which consists of a tunnel driven in rock. It is on the east side of Baboquivari Peak 1½ miles north of Schaefer Well.

Peblo Well.—Page 375; Plate XXIV.

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Pena Blanca Canyon, springs at head of south fork.—Plate XXV. These springs are shown on map of Mexican Boundary Survey. No other information is available.

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Phoenix.—Page 361; Plate XXIV.

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Pima village.—Plate XXIV. An Indian village south of Gila Crossing. The canal usually contains water, and there are some shallow wells.

Pimeria Well.—Page 415; Plate XXIII.

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Powers Well.—Page 413; Plate XXIII. A dry well dug 135 feet deep.

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Pozo Blanco, represo northwest of.—Plate XXIV. This represo is the water supply for a summer ranchería and temporales. It is not large, but how long water remains here after rains is not known.

Pozo Blanco, represo 7 miles southwest of.—Plate XXIV. A represo located at a temporal in Quijotoa Valley 4 miles south of an abandoned temporal on Pozo Blanco route. There is no information as to how long water remains in represo after rains.

Pozo Blanco, well north of.—Page 346; Plate XXIV. On road to Brownell and Black Prince mine.

Pozo Colorado.—Plate XXV. A winter ranchería and well in North Comobabi Mountains 4 miles northwest of Comobabi.

Pozo de Luis.—Page 373; Plate XXIV.

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Pozo Redondo.—Page 408; Plate XXIV.

Pozo Verde.—Page 392; Plate XXV. A winter ranchería 2 miles south of the international boundary, containing a well and rock tanks.

Pozo Verde, well northeast of.—Plate XXV.

P. Robles Well.—Plate XXV. This well is 4 miles northwest of Cocoraque ranch, but nothing else is known of it.

Puerto Spring.—Plate XXV. A spring on the east slope of Diablito Mountain 6 miles southeast of Moyza.

Punta de Agua.—Plate XXV. From this point east to Arivaca there is water in bed of Arivaca Creek throughout year.

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Quajote.—Page 371; Plate XXIV.

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Ranger station.—Page 351; Plate XXV.

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Rawhide Well.—Plate XXV. This well is 4½ miles southwest of Salina Williams represo and 8 miles south of Vamori. It is 80 feet deep.

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Redondo Well.—Plate XXV. A stock-watering place used by Anvil ranch on east side of Baboquivari Mountains in T. 18 S., R. 8 E.

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Reynolds Well.—Page 339; Plate XXIII.

Rillito.—Page 366; Plate XXV.

Ripsey ranch.—Plate XXV. This ranch usually called D Bar H ranch, is on Florence-Winkleman road and has a dug well and windmill.

Road Runner.—Page 388; Plate XXIV.

Roadside mine.—Page 335; Plate XXV.

Robledo ranch.—Page 359; Plate XXV.

Robles ranch.—Page 335; Plate XXV.

Rocky Point.—Page 393; Plate XXV.

Rodriguez.—Plate XXV. A homestead in T. 14 S., R. 11 E., containing a represo.

Ronstadt ranch.—Page 356; Plate XXV.

Roskruge Mountains, well west of.—Plate XXV. A dug well 60 feet deep about 8 miles northwest of San Pedro.

Ryans Tank.—A prospect hole that fills periodically with water. It lies in the Wellton Hills (Pl. XXIII), but no information exists for locating it on the map.

Sacaton.—Page 369; Plate XXV.

Sahuarito.—Page 351; Plate XXV.

Salina Williams represo.—Plate XXV. A small represo 2 miles southeast of Chulik.

Salt Well.—Plate XXIV. Near Isabella mine.

San Antone.—Page 372; Plate XXIV.

Sand Tanks.—Page 386; Plate XXIV.

San Fernando.—Page 356; Plate XXV.

San Juan Spring.—Plate XXV. This spring supplies water for winter ranchería of San Juan (p. 392).

San Juan, well north of.—Plate XXV. A dug well 80 feet deep with water 50 feet from surface of ground.

San Lorenzo.—Plate XXV. On north side of North Comobabi Mountains.

San Luis ranch.—Plate XXV. A ranch 1½ miles east of Aguajita in T. 21 S., R. 9 E., that has a dug well.

San Miguel.—Page 392; Plate XXV.

San Miguel Wells.—Plate XXV. Four dug wells 6 miles east of San Miguel are called San Miguel Wells.

San Pedro.—Page 335; Plate XXV.

San Rafael.—Page 393; Plate XXIV.

Santa Cruz.—Plate XXIV. A winter ranchería with three dug wells 2½ miles east of Nolic.

Santa Cruz Cienega.—Plate XXIV. A swampy area of salt grass and mesquite on the Santa Cruz between Maricopa and Gila Crossing. Water can be obtained at all times by digging.

Santan.—Page 369; Plate XXV.

Santa Rosa.—Page 372; Plate XXIV.

Santa Rosa ranch.—Page 345; Plate XXV.

Santa Rosa, represos south of.—Plate XXIV. These three represos with clusters of houses are south of Santa Rosa at distances of 1, 9, and 15 miles. There is no information as to how long they hold water.

Santiagos Well.—Plate XXV. A dug well 9 miles northeast of Komalik. It is 72 feet deep and water is 48 feet below the surface. There is another dug well 2 miles south.

San Vicente.—Page 335; Plate XXV.

San Xavier del Bac.—Page 353; Plate XXV.

Sasabe.—Page 356; Plate XXV.

Sasabe, spring east of.—Plate XXV. A spring a mile east of Sasabe is shown on map of Mexican Boundary Survey. No information concerning its value is available.

Sasco.—Page 367; Plate XXV.

Sauceda.—Page 388; Plate XXIV.

Saucito Spring.—Plate XXV. A spring on northwest slope of Chiminea Mountain, a mile north of Montana mine. This small spring sometimes goes dry.

Saxton Dairy.—Page 351; Plate XXV.

Schaefer Well.—Page 355; Plate XXV.

Secundino Well.—Page 355; Plate XXV.

Sentinel.—Page 339; Plate XXIII.

Serventi Well.—Page 396; Plate XXIV.

Serventi Well, charco near.—Page 396; Plate XXIV.

Sheep Tank.—Plate XXIII. A rock tank on north side of Sheep Peak, 18 miles by trail northwest of Bates Well. Water is found here for several months of the year.

Sikulhimakt.—Page 346; Plate XXV.

Silver Bell.—Page 354; Plate XXV.

Silver Bell road, well on.—Page 354; Plate XXV.

Simmons Well.—Page 361; Plate XXV.

Skoksonak.—Plate XXV. A Papago ranchería 5 miles northeast of Aguirre. No information is available regarding its water supply.

Slate Mountains, well east of.—Plate XXV. A well about 17 miles west of Silver Bell, from which it is reached by road. It is shown on township plat, but no information is available in regard to its value as a watering place.

Snaketown.—Plate XXV. An Indian village on north bank of Gila River 11 miles west of Sacaton.

Sonoqui's ranch.—Plate XXV. A ranch on Queen Creek, in sec. 27, T. 2 S., R. 7 E. There is a well 95 feet deep.

Squaw Tit Peak, spring near.—Page 378; Plate XXIV. A spring 4 miles south of Stouts Well.

Stanwix.—Page 339; Plate XXIII.

Steele Well.—Page 414; Plate XXIV.

Steel Tanks.—Plate XXIII. A locality 2½ miles southeast of Papago mine. Some prospectors once planted some steel tanks in the arroyo at this place to hold water, hence the name.

Stevens.—Page 353; Plate XXV.

Stout's ranch.—Page 390; Plate XXIV.

Stouts Well.—Page 386; Plate XXIV.

Stoval.—Page 339; Plate XXIII.

Sunnyside ranch.—Plate XXV. An uninhabited ranch with dug well and windmill, about 4 miles east of the Foreman ranch.

Susuta.—Page 394; Plate XXIV.

Sweetwater.—Plate XXV. An Indian village on north bank of Gila River 8 miles west of Sacaton.

Tartron.—Page 385; Plate XXIII.

Tecolote.—Page 392; Plate XXIV.

Tempe.—Page 363; Plate XXV.

Thomas Well.—Plate XXV. A dug well in T. 19 S., R. 8 E., used as a stock-watering place by the La Osa Land & Cattle Co.

Thumb Butte, springs south of.—Plate XXV. The most northern of these springs is alongside of the Nogales-Arivaca road and is mentioned on page 359; the most southern is 2½ miles south of the butte.

Tinajas Altas.—Page 405; Plate XXIII.

Tinajas de Don Diego.—See Don Diego Tanks.

Toapit.—Page 388; Plate XXIV.

Toltec.—Page 366; Plate XXV.

Tonukvo.—Page 396; Plate XXIV.

Topahua.—Page 392; Plate XXV. In addition to the Indian Service well there is a represo.

Totobit Tanks.—Page 378; Plate XXIV.

Tres Bellotas.—Plate XXV. A stock-watering place on the Mexican boundary 10 miles east of Sasabe. There are two wells here about a mile apart.

Tubac.—Page 351; Plate XXV.

Tucson.—Page 334; Plate XXV.

Tucsoncito.—Page 392; Plate XXV.

Tucson-Yuma road, charco on portion between Pisinemo and Charco en Medio.—Page 337; Plate XXIV.

Tule Tank.—Page 405; Plate XXIII.

Tule Well.—Page 404; Plate XXIII. Watering place on the Camino del Diablo.

Tule Well.—Page 414; Plate XXIV. Four miles west of Cardigan.

Tully Well.—Plate XXV. A stock-watering place 1½ miles south of San Luis ranch in T. 21 S., R. 9 E.

Tumacacori Mission.—Page 351; Plate XXV.

Twin Buttes.—Page 353; Plate XXV.

Vamori.—Page 393; Plate XXV. In addition to Indian Service well there is a large represo.

Vasquez.—Plate XXV. A small ranch 6 miles north of Picacho. Nothing is known of its water supply.

Vekol.—Page 387; Plate XXIV.

Vekol Valley, water hole in.—Page 378; Plate XXIV.

Ventana.—Page 392; Plate XXV. At this ranchería there are three dug wells.

Ventana Ranch Well.—Plate XXV. A drilled well, 2½ miles west of Chulik, which has been abandoned for many years.

Verdugo Well.—Plate XXV. A well 9 miles north of Picacho. It is shown on township plat, but there is no other information concerning it.

Wakefield ranch.—Page 366; Plate XXV.

Walls Well.—Page 348; Plate XXIV.

Walnut Well.—Page 347; Plate XXV.

Ward.—Plate XXV. A locality at which it is presumed that water may be obtained.

Warren.—Plate XXIV. A locality in cove between Baboquivari and Coyote mountains. There is said to be a well here.

Warren Brothers Wells.—Page 335; Plate XXV. There are three of these wells.

Warsaw.—Plate XXV. An old mining settlement 3½ miles south of Austerlitz. There is a small spring fed by an old reservoir filled with sediment. It contains sufficient water for a few cattle and prospectors.

Weaver Well.—Page 366; Plate XXV.

Weldon mine, wells near. Plate XXIV. These wells are located in the canyon leading from San Antonio and are all dug wells. The traveler will probably need a bucket and rope to get water.

Wellton.—Page 339; Plate XXIII.

Wetmore's ranch.—Plate XXV. One of a number of ranches along Rillito Creek. All have wells.

White Tanks.—Plate XXIV. Small rock tanks on east side of railroad just north of gap through which it crosses the end of the Crater Mountains. The tanks hold water for only a month or two after rains.

Whites Well.—Page 415; Plate XXIII.

Whites Well.—Plate XXIV. A well 2 miles west of Isabella mine. It is not known whether this well has been completed or not. It is a doubtful water supply.

Wickchoupai.—Plate XXV. A winter ranchería and two dug wells 2 miles south of Santa Cruz.

Williamson Store.—Page 381; Plate XXIV. Abandoned store, dug well; may be without equipment to obtain water.

Willow Spring.—Plate XXV. A spring in Piskorski Canyon 6 miles southwest of Tumacacori Mission. There is an unnamed spring a mile northwest of Willow Spring.

Wymola.—Page 366; Plate XXV.

Yanks Spring.—Plate XXV. A spring on the east side of Cobre Ridge 1½ miles west of Oro Blanco. The spring is permanent and sufficient for 250 head of cattle.

Yuma.—Page 339; Plate XXIII.

Yuma, wells south of.—Plate XXIII.

Yuma, windmill east of.—Plate XXIII.

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EXPLANATION

Intermittent stream

Wash

Nonflowing well

Abandoned well or dry hole

Spring

Natural reservoir or tank

Cistern or other artificial reservoir

Pumping plant or windmill

Irrigation canal, ditch, or pipe line

Repress

Temporal

Road

Secondary road

Trail

Signpost erected by U. S. Geological Survey

Boundary monument

Bench mark

Mine

RELIEF MAP OF THE CENTRAL PART OF THE PAPAGO COUNTRY, ARIZONA

SHOWING DESERT WATERING PLACES

Scale of Miles

Compiled from plane-table sheets by Kirk Bryan, U. S. Geological Survey topographic maps; U. S. Indian Service maps, maps of the International Boundary Commission, maps of the Forest Service, township plats of the General Land Office, and other sources
Relief shading by John H. Renshawe

Watering-place survey by Kirk Bryan
Area north of Gila River by Clyde P. Ross
Surveyed in 1917

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RELIEF MAP OF THE WESTERN PART OF THE PAPAGO COUNTRY, ARIZONA

SHOWING DESERT WATERING PLACES

Scale 1:250000

5 0 5 10 15 Miles

Datum is mean sea level

1922

Compiled from plane-table sheets by Kirk Bryan, U. S. Geological Survey topographic maps, U. S. Indian Service maps, maps of the International Boundary Commission, maps of the Forest Service, township plats of the General Land Office, and other sources

Relief shading by John H. Renshawe

Watering-place survey by Kirk Bryan

Area north of Gila River by Clyde P. Ross

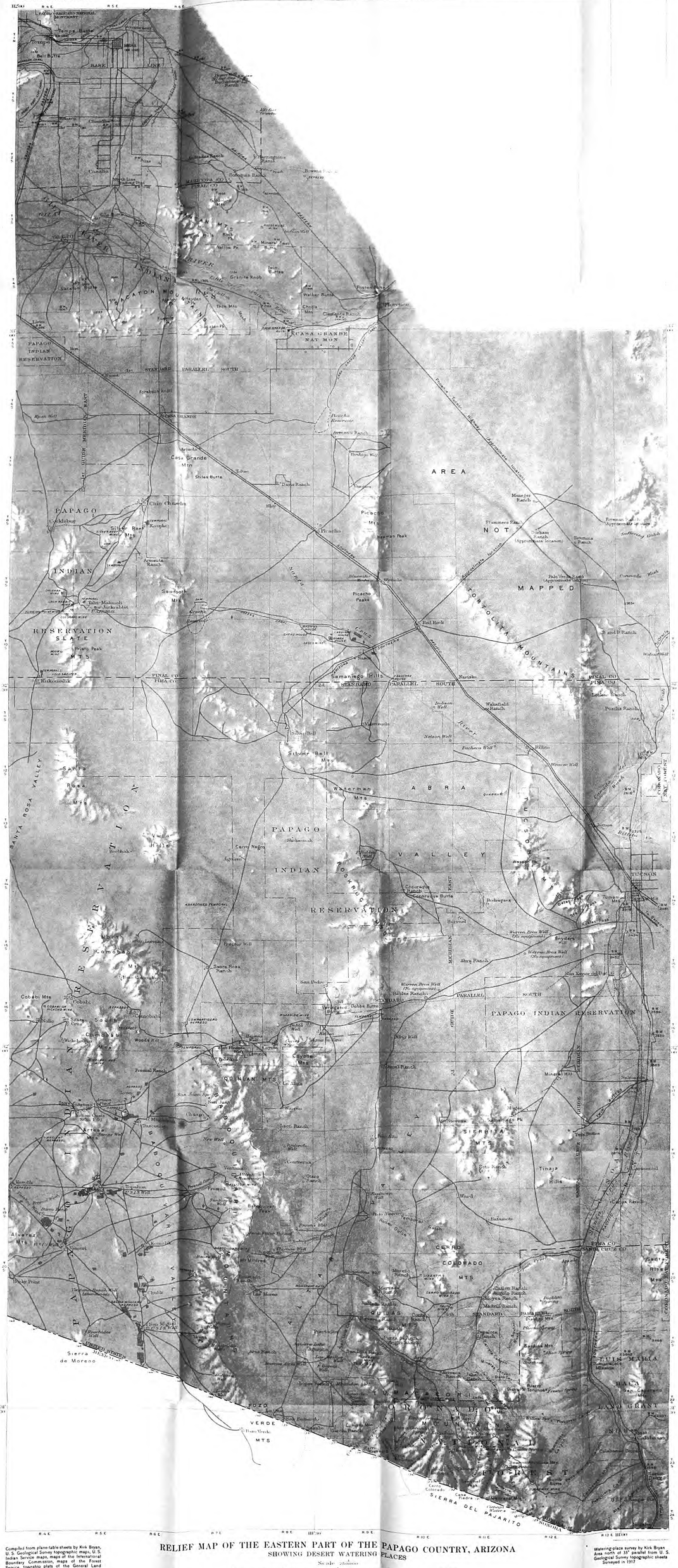
Surveyed in 1917

EXPLANATION

- Perennial stream
- Intermittent stream
- Wash (Water course that is usually dry)
- Nonflowing well
- Abandoned well or dry hole
- Spring
- Natural reservoir or tank
- Cistern or other artificial reservoir
- Pumping plant or windmill
- Irrigation canal, ditch, or pipe line
- Repress
- Road
- Secondary road
- Trail
- Signpost erected by U. S. Geological Survey
- Boundary monument
- Bench mark
- Mine

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Compiled from plane-table sheets by Kirk Bryan, U. S. Geological Survey topographic maps, U. S. Indian Service maps, maps of the International Boundary Commission, maps of the Forest Service, township plats of the General Land Office, and other sources
Relief shading by John H. Reinhawe

RELIEF MAP OF THE EASTERN PART OF THE PAPAGO COUNTRY, ARIZONA

SHOWING DESERT WATERING PLACES

Scale 2 Miles

Datum is mean sea level

1922

Watering-place survey by Kirk Bryan
Area north of 33° parallel from U. S. Geological Survey topographic sheets Surveyed in 1917

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