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UNITED STATES GEOLOGICAL SURVEY

GEORGE OTIS SMITH, Director

Water-Supply Paper 490-C

ROUTES TO DESERT WATERING PLACES IN THE
LOWER GILA REGION, ARIZONA

BY

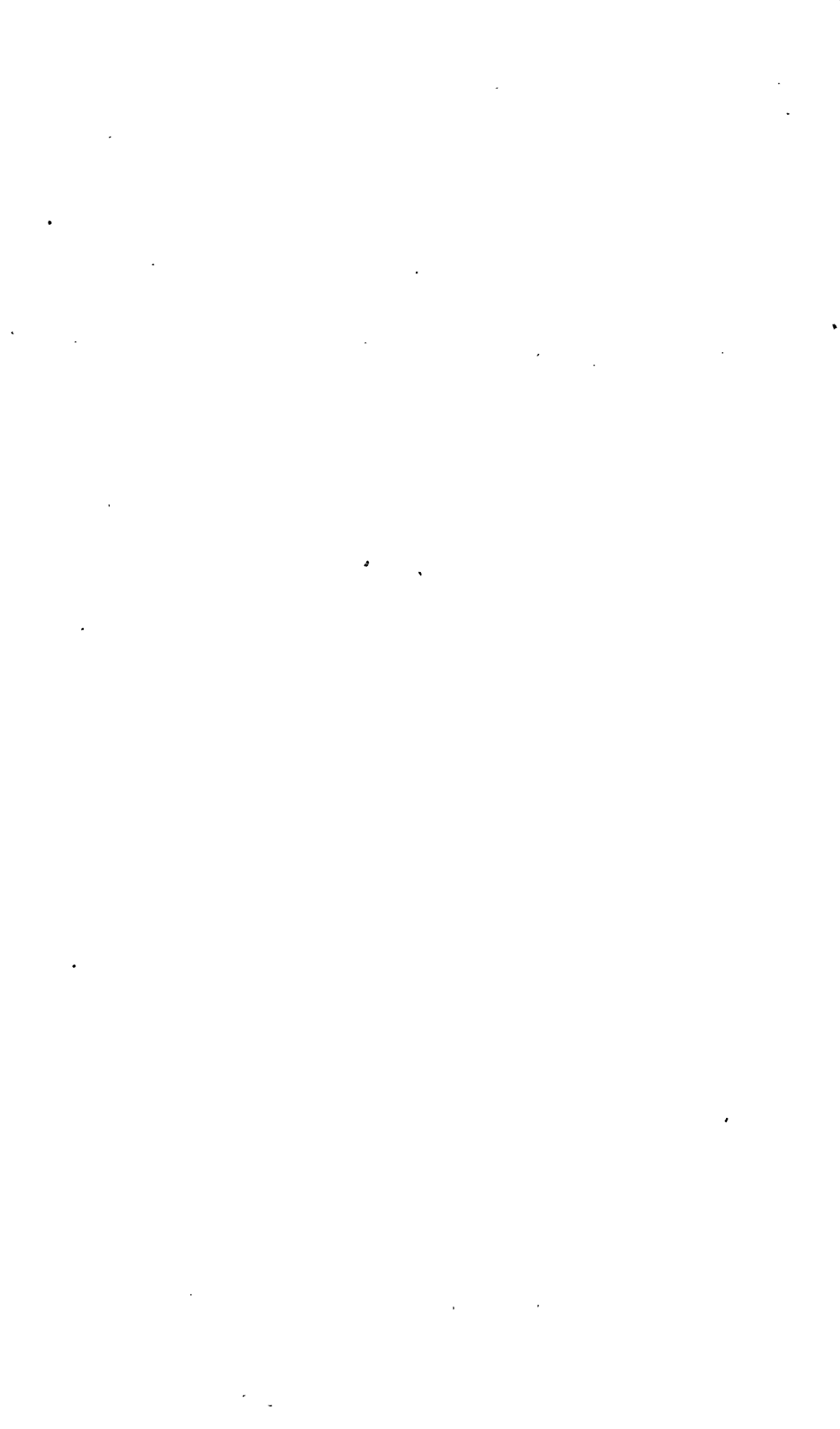
CLYDE P. ROSS



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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.



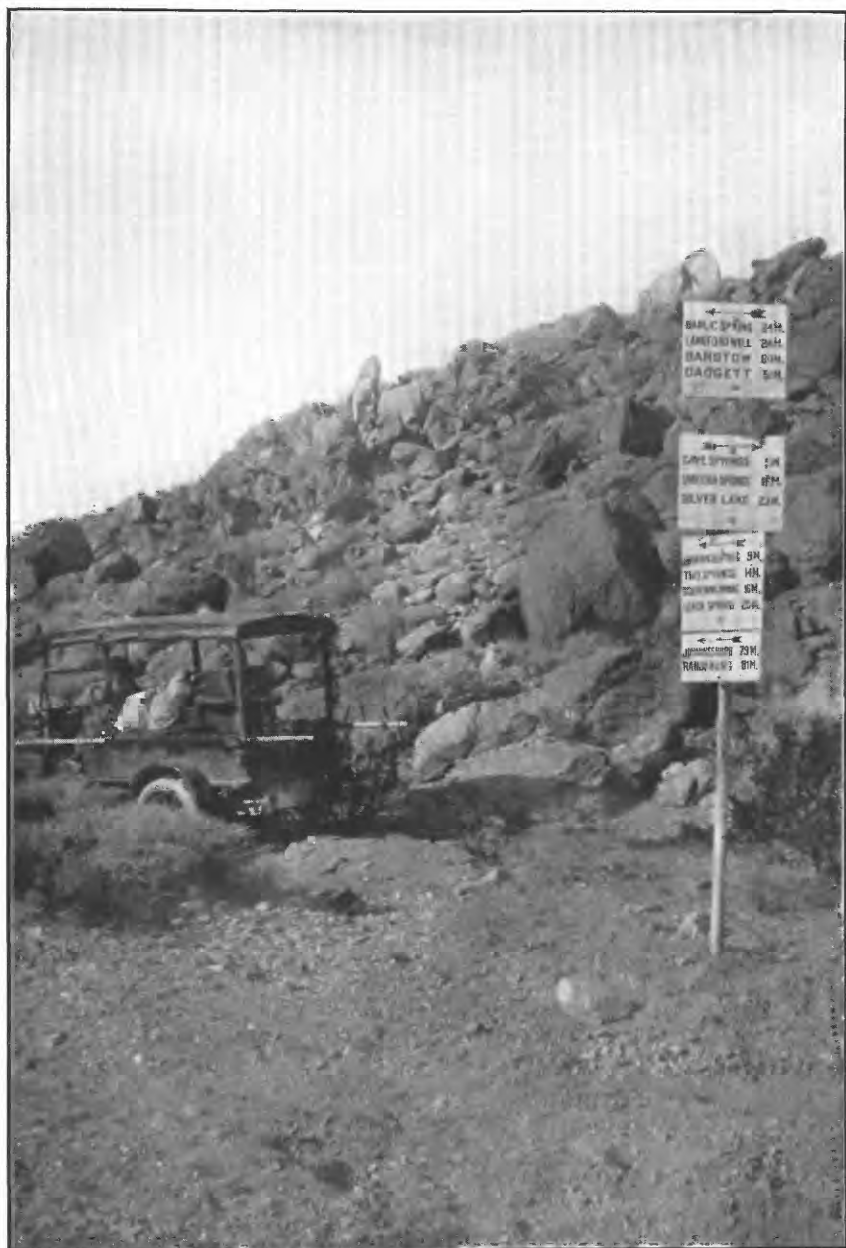
A. FIRST DESERT WATERING PLACE SIGNPOST ERECTED BY THE UNITED STATES GEOLOGICAL SURVEY.

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.

ROUTES TO DESERT WATERING PLACES IN THE LOWER GILA REGION, ARIZONA.

By CLYDE P. ROSS.

INTRODUCTION.

LOCATION AND EXTENT.

The area covered by this guide lies in central Yuma and western Maricopa counties, Ariz. The part in Maricopa County includes the irregularly shaped region with Phoenix at its eastern vertex, bounded on the north and northeast by the road from Phoenix through Wickensburg to Wenden, on the south by the Salt and Gila river valleys, and on the west by the western boundary of Maricopa County. The part in Yuma County is bounded on the north by the road between Wenden and Parker through Cunningham Pass, on the south by the valley of Gila River, on the east by the eastern boundary of the county, and on the west by the western boundary, which is Colorado River. (See fig. 6.) Owing to lack of time and facilities, most of the region in and near the S. H. Mountains and the region near Cibola were not visited. There is very little travel of any kind in either of these parts of the area, as they are not accessible by automobile. The information here given in regard to them, although not first hand, is believed to be reliable and as nearly complete as it was possible to gather. So far as this information relates to watering places for travelers it is included in this report, but more extensive and general information is to be given in the complete guide to be published later.

METHODS OF FIELD WORK.

All the principal roads and as many of the minor ones as possible were traversed by automobile. Logs based on speedometer readings were made, and most of them were checked by traveling the same road more than once. This method of measurement is subject to a number of unavoidable and indeterminate errors. An absolute check between the readings of speedometers on two different cars traveling the same road, or even those of the speedometer on the same car traveling at two different times, can not be expected. However, it is believed that the logs here given are sufficiently accurate for prac-

tical purposes. For roads not actually traveled the best information available is given.

Not only were logs of the roads obtained, but the country through which the roads pass was mapped by means of a plane table, supple-

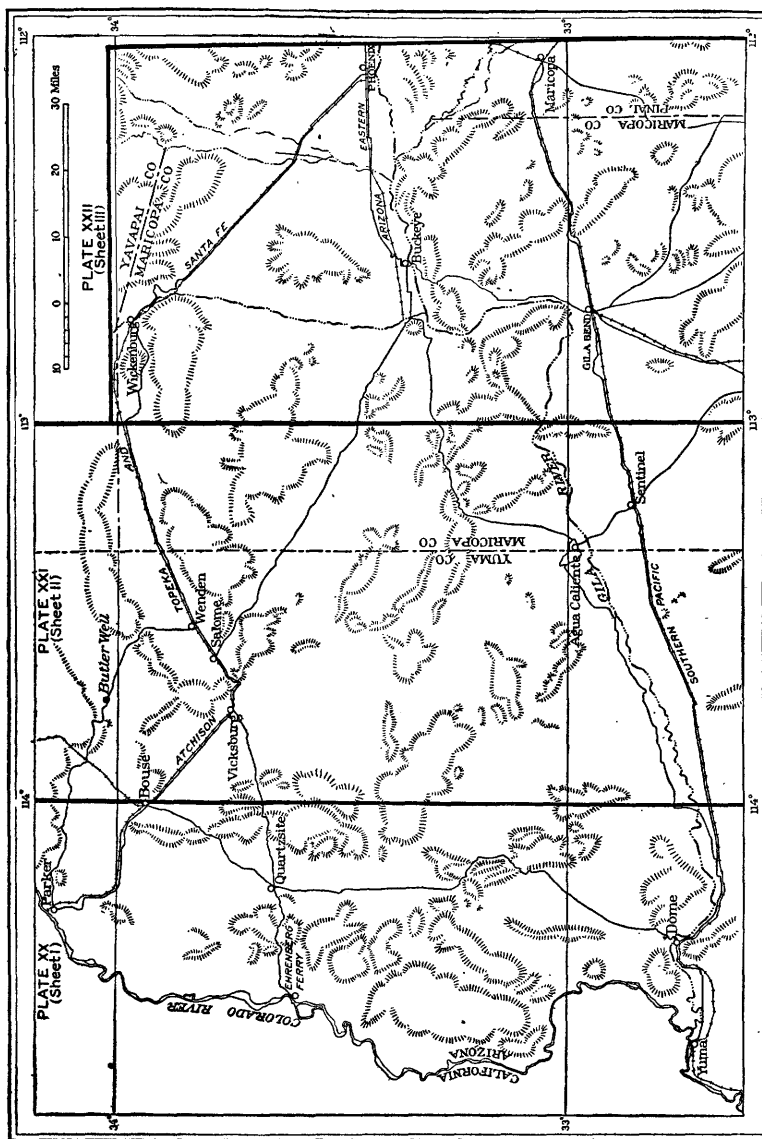


FIGURE 6.—Map of western Maricopa and central Yuma counties, Ariz., showing principal roads and watering places and areas covered by Plates XX-XXII.

mented by a few compass traverses. The topographic maps (Pls. XX-XXII, in pocket) presented with this report are the result of the compilation of these data and all other available information. Every effort was made to get as much reliable information in regard to

the geography, geology, and hydrology of the region as possible, both by direct field observation and study and by inquiry. All available information in regard to watering places in the region was particularly desired, whether or not they were actually visited. The general and technical information obtained is reserved for the complete guide which will be published later, but all information in regard to watering places that will be of use to travelers is included in the present report.

THE LOGS.

The logs published herewith are designed to enable a person unfamiliar with the roads in the area covered by this guide to follow them. All places at which water or other supplies can be obtained are mentioned. For the sake of uniformity, all distances between towns are given from railroad station to railroad station where such exist. Where there is no railroad station the distance to the post office is given. All road forks and crossings likely to be confusing to the traveler, which were in existence at the time the field work was done, are noted. Road details change with surprising frequency in parts of this region. Consequently it is very probable that some changes have occurred since these logs were made. This fact should be borne in mind when using them. More roads that show evidence of being recently traveled will be found in winter than in summer, because the annual assessment work on many of the mining prospects is commonly done during the cool and comfortable winter months.

Detailed logs could not be prepared for roads that were not traversed during this investigation, but several brief descriptions of these roads are given, based on the best available information. With the aid of these descriptions and the maps these roads can probably be traveled with little difficulty.

THE MAPS.

The topographic maps published herewith are regarded as among the most important results of this investigation. They are the only reliable maps covering the whole area. Detailed contour maps have been published by the United States Geological Survey for the vicinity of Parker, Yuma, and Phoenix. The northern part of the area covered by this guide is shown on Bancroft's map of northern Yuma County,¹ but this map is the result of rapid reconnaissance work and is accurate only in a general way. The principal general maps of the area hitherto published are those of the early explorers, those made by the county engineers of Yuma and Maricopa counties, and the State map compiled by the General Land Office from township

¹ Bancroft, Howland, Reconnaissance of the ore deposits in northern Yuma County, Ariz.: U S Geol. Survey Bull. 451, pl. 1 (in pocket), 1911.

plats. The maps in this report are compiled from all the data previously published, some unpublished maps of the Atchison, Topeka & Santa Fe Railway, a large amount of plane-table surveying by the author, a plane-table survey of the country between Phoenix and Wickenburg, made for the United States Geological Survey by C. G. Puffer, and miscellaneous data obtained by inquiry and correspondence. This information is believed to be reliable in general, although most of it is not accurate in detail. Close to the main roads the detail is sufficiently accurate to serve as a material aid in following the roads. The parts of the map representing those portions of the area which were not visited during the investigation are much less reliable than the rest. This is particularly true of the portion in which the Chocolate and Trigo mountains lie.²

All the main roads and many of the less important roads have been placed on the map principally from data obtained in the field. All forks of any importance along these roads are shown, but many of the branch roads and trails are not shown. Even where the roads and trails are not shown or are only approximately indicated the topography shown should be of great assistance in finding one's way through the country. The brief descriptions of watering places remote from main roads, given in the list of watering places, should also be helpful.

The relief shading of the maps was done by J. H. Renshawe, of the topographic branch of the United States Geological Survey. The light is assumed to come from the northwest corner of each sheet, so that the southeast slopes are in shadow. Different depths of shading have been used to indicate the elevation of parts of the region. The high parts are shown in the lightest shades. All parts shown in the same shade are at equal elevations, except that areas which are in shadow are darker than areas of equal elevation which are illuminated by light from the northwest. The data on which the shading was based are taken from many sources and vary greatly in reliability. Only in those relatively small portions of the area for which standard contour maps have been published by the United States Geological Survey can these data be considered accurate in all details.

ACKNOWLEDGMENTS.

The data in this report were gathered from so many different sources that it is impossible to acknowledge all of them individually. The author wishes to express his warm appreciation of the uniform kindness and hearty cooperation on the part of nearly everyone with whom he came into contact during the field work. He is indebted to

² Since this field work was completed two important compiled maps have been published, both of which embody the results of this work. These are the U. S. Geological Survey's map of Arizona, scale 1:500,000, and the General Land Office's map of Arizona, 1921 edition.

the officials of the Flower Pot Cattle Co., of Arlington; Mr. R. O. Worley, of Bouse; Mr. T. W. Bales, of Vicksburg; Mr. C. M. Hindman, county engineer of Yuma County; the Chamber of Commerce of Phoenix; and very many others for assistance and valuable information. The Atchison, Topeka & Santa Fe Railway Co. supplied valuable data in regard to water supplies and to alinements and elevations along its road.

The work was done under the direction of O. E. Meinzer, chief of the division of ground waters of the United States Geological Survey. He and other members of the Survey have furnished data or have given valuable suggestions. E. L. Jones in particular has furnished information in regard to the topography and water resources of the S. H. Mountains and other parts of the area with which he is personally familiar.

ROAD DIFFICULTIES AND SUGGESTIONS FOR SURMOUNTING THEM.

The roads in southwestern Arizona with few exceptions have been but little improved. Here and there may be found excellent stretches of graded road built and maintained by the county or State which reflect credit on the engineering skill of those in charge. However, the mileage of good roads compared to the total mileage of roads in this part of Arizona is very small. The traveler who uses the roads in this region now and for a number of years to come must expect to encounter long stretches on which little or nothing in the way of improvement has been done. Under such conditions it is inevitable that certain portions of the roads will at times get into such poor shape as to make travel over them rather difficult. The well-traveled roads rarely get in such condition as to be at all dangerous or even really difficult for an automobile in good condition. This is particularly true if one, knowing the impediments to travel likely to be encountered, goes prepared to cope with them. The following is a brief description of the major road difficulties, together with some suggestions for overcoming them. As most of the travel in this region is by automobile, the needs of the motorist have been kept particularly in mind. However, much of what follows applies equally to travel by wagon or automobile.

It is well to remember that on many of these roads garages at which even simple repairs can be made are separated by 50 or 100 miles, or even greater distances; consequently the car should be put in as good shape as possible before starting. Enough tools and spare parts should be taken so that minor repairs can be made on the road. There should be ample gasoline in the car when leaving a supply station to last until the next point at which it can be obtained is reached. Fewer miles per gallon must be expected on unimproved

roads than on boulevards, and the gasoline obtainable will not always be of the best quality. Gasoline should be carried in at least one container in addition to the tank in the car, in order to have a reserve in case of a leak in the gas line.

A few tools for overcoming road difficulties should be carried. A shovel and ax and perhaps also a pick are likely to prove valuable possessions at times. A rope and tackle or one of the patented devices of this nature might be useful to pull the car out of a hole or up a steep bank. A rope and bucket are often necessary to obtain water from wells. Plenty of water should be taken. The amount should be great enough to fill the radiator at least once, in case of a leak. Human consumption is very great in the desert. Two gallons per man per day is a minimum requirement. It is advisable to carry a little food and bedding even if you are placing your main reliance on the eating houses and hotels along the way. There is always the possibility of not arriving at the hotel on schedule time. Even with a car in good condition at the start, a breakdown may occur on the desert or in the mountains far from any habitation. Without provisions such an occurrence might prove a very serious matter. With them it becomes merely a vexatious delay. At some places food can be purchased but the traveler must provide his own bedding.

One of the impediments to travel very frequently encountered is that presented by the dry washes. These are stream courses which are entirely dry except for short periods immediately after exceptionally heavy rains. During times of flood it is impracticable to attempt to ford the streams, and travelers must wait at some town until the flow ceases. Such delays are rare and usually short, even during the rainy season.

A dry wash presents difficulties of two kinds. First, the banks are often steep, making descent into and ascent out of the wash abrupt. When on a road over which there has been little recent travel, it is wise to look at the wash and its banks before attempting to cross.

One can often save time by cutting down the banks to a better grade or otherwise improving the road across the wash. It is much easier to cross a wash with the aid of the momentum of the car than it is to get out of it after the car has got stuck and been compelled to stop.

A rather frequent difficulty with a Ford automobile in ascending the bank of a wash or other steep pitch is that the gasoline fails to feed from the tank into the carburetor. This, of course, is especially likely to occur when the gasoline supply is getting low. Slopes steep enough for this sort of trouble are usually short, and if the car is moving at a fair rate of speed its momentum is frequently sufficient to carry it over without difficulty. If the car stops at the foot of

such a pitch, however, it may be impossible to get it started under its own power. At such times the motorist will be very thankful if he has had sufficient forethought to bring a shovel to cut down the obstruction to a practicable grade, and a rope and tackle or similar device to aid the engine.

Various devices for pumping air into the gasoline tank and thus getting a sufficient increase in pressure to force the gasoline through the carburetor have been tried. So far as known to the writer none of these devices have been perfected for use on the Ford car. One scheme, used on the Geological Survey car in desert watering place work north of Gila River, is to fit the screw cap of the gasoline tank with an ordinary tire valve and pump air in with the tire pump. This helps in an emergency but has three disadvantages. The cushion must be removed during the operation, making it slightly difficult to drive. The screw cap is not perfectly airtight, so it is hard to get sufficient pressure to do much good, especially in the awkward position in which the pump must be used. This cap can not be left on the tank permanently, as the valve easily clogs with dirt. When this happens no air enters the tank from above, and the gasoline, of course, does not flow even when the tank is full.

Besides the difficulties encountered in climbing the banks of a wash trouble may be encountered in crossing the sandy or gravelly bed. Here also it is very important to maintain the momentum of the car. The traveler, however, is not advised to rush his car across a wash at high speed, for such a proceeding is always dangerous and might lead to disaster, but the car should be kept moving all the time until the wash is passed. Look before you get into it if you have any doubts as to the condition of the road. If the road is not in good shape it will usually result in a saving of time and labor to put it in good shape, so far as possible, before attempting to cross. On the main traveled routes the banks of washes are usually cut or worn down and the roads across them packed sufficiently so that no difficulty will be encountered. Even on such routes, however, it is well not to assume that everything is all right until you have satisfied yourself that it is.

In crossing the bed of a wash, or following a road along such a bed, or, indeed, in going over any stretch of soft roadbed, it is absolutely necessary to keep in the tracks made by the wheels of the vehicles that have gone before. A car may run easily in a track packed down by previous automobiles and yet be entirely unable to make any progress in the soft, unpacked sand or gravel on either side. One danger to be constantly guarded against is that of getting off the road in the wake of some car that has started off a few feet and then backed into the road again. One of the Geological Survey parties spent 24 hours in a gravel-bottomed wash in La Posa Plain near

Quartzsite because the driver followed such a set of tracks and got off the roadway. The car was finally backed out the way it had come, and the wash was not crossed at that place.

If the roadway in a wash or elsewhere is too soft to afford traction, it can be corduroyed. If planks are available, they are excellent to lay in the tracks for the wheels to run on, but they are usually not to be had. Creosote and similar bushes grow almost everywhere, however, and if cut and laid crosswise of the tracks for a considerable distance they will afford traction for the wheels. It is usually not necessary to lay them the whole distance across the soft ground, unless this is very short, as the car ordinarily gathers momentum enough to carry it some distance past the end of the corduroyed piece. It may be necessary, especially in long sandy stretches, to let the air out of the tires until there remains only a pressure of about 25 pounds in them. This provides a greater bearing surface and is of very great assistance. It is of course very injurious to the tires, causing rim cutting, and should not be resorted to unless unavoidable.

The road difficulties met with in sandy places such as parts of the flood plains of rivers and sand dunes are similar to those met in the bottoms of sandy washes, and no further consideration is necessary.

The difficulties encountered with silt in river flood plains and on adobe flats in desert valleys are of two kinds. In wet weather such places are liable to be "seas of mud," and passage over them is difficult, if possible at all. Local advice should be sought and carefully considered before making the attempt. In dry weather, especially if there has been much travel, roads over them are sure to have deep ruts and to be "chucky," in some places exceedingly so, but are not likely to present any difficulties to the traveler who does not try to go over them too fast and incautiously. High centers should be watched for and avoided if possible. Usually there is a choice of a number of tracks across such places, crossing and recrossing each other but all leading to the same destination. Care should be taken in following one set of these tracks to see that it leads in the same general direction as the majority, or the traveler will wander off to some place that he has no desire to visit. If the surface is hard and the car lightly laden, it may be well to make a new track, for by doing so much shaking up from the chuck holes in the old tracks may be avoided. This should be attempted with caution, however, as the surface may not be as hard as it looks, and the result of leaving the beaten track may be that the car will get stuck and will require more or less labor to get it back into the road again.

The difficulties encountered on mountain roads are familiar to most experienced motorists. No general advice can be given except to take no needless chances and avoid excessive speed. Keep the car entirely under control at all times. Remember that the road is

narrow, sometimes so narrow that two cars can not pass. Before starting on such a very narrow stretch, look and listen to be sure that no car is coming the other way. A meeting where the road is so narrow that it is impossible either to turn around or to pass the other car would cause delay, if nothing more.

In conclusion it may be said that the roads in southwestern Arizona, though in general unimproved and rough, are for the most part passable and offer no particular danger or great difficulty to the experienced driver who takes proper precautions and sufficient supplies. He who is reckless, ignorant, or careless is likely to find trouble here as elsewhere.

MAIN ROUTES OF TRAVEL.

The main route of travel through the region covered by this guide is the road between Phoenix and Yuma, about 200 miles long. The route by way of Deep Wells is 222 miles long, but this route is now seldom used and is not recommended. At Yuma the road connects with main roads leading to Los Angeles and San Diego.³ The distance to Los Angeles from Yuma is 320 miles by way of San Diego and 294 miles by way of Mecca; the former is perhaps the more favored route. According to recent maps from the office of the State highway engineer it is planned to construct a permanent graded highway between Phoenix and Yuma crossing Gila River near Enterprise ranch, passing through Gila Bend, and following the railroad from that town to Yuma.

Almost as much used are the routes between Phoenix and Parker, 162 to 178 miles long according to the exact course taken. At Parker these routes connect with roads leading to San Bernardino and Los Angeles.⁴ The distance to Los Angeles from Parker is 132 to 170 miles according to the route; the longer route is the better.

Roads branching from the Phoenix-Parker routes lead by way of Quartzsite to Ehrenberg Ferry, on the Colorado, and there connect with a main road leading through Blythe and Coachella Valley to Los Angeles.³ The distance from Phoenix to Ehrenberg is 163 to 193 miles, according to the exact course that is taken. The distance from Ehrenberg to Los Angeles is 248 miles.

There are various routes and combinations of routes between Phoenix and Parker. All of them are used by travelers from and to points in California, and all are referred to locally as the "Parker cut-off." From Phoenix one may follow in a general way the line of the Santa Fe, Prescott & Phoenix Railway (Santa Fe system) through Wickenburg, Wenden, Salome, and Bouse to Parker, or he may leave the railroad at Wenden and go to Parker by way of Cunningham Pass

³ See U. S. Geol. Survey Water-Supply Paper 490, pp. 1-86, 1920 (Water-Supply Paper 490-A).

⁴ See U. S. Geol. Survey Water-Supply Paper 490, pp. 87-269, 1920 (Water-Supply Paper 490-B).

and Butler Well. Other routes lead through Buckeye Valley, past Winters Wells, Palo Verde mine, and Tolladays Well, through Harrisburg Valley, and thence either through Wenden and Cunningham Pass to Parker or through Salome and Bouse along the railroad to Parker. The choice depends on individual preference and on the condition of the various roads at different times. The route by way of Wickenburg and Bouse is more than 15 miles longer than that by way of Buckeye, Winters Wells, and Bouse, but in the early part of 1918, after a prolonged drought, many travelers were going by way of Wickenburg in order to avoid badly cut up stretches of road near Winters Wells and across the Harquahala Plains. The Wickenburg road was not traveled by the writer during the present investigation. After periods of heavy rains the road by way of Wenden and Cunningham Pass is reported to be better than that along the railroad through Bouse, but this route is not good immediately after a rain storm. Some prefer the road through Cunningham Pass at all seasons. Recent information from the Phoenix Chamber of Commerce and from Bushs Ferry, Parker, is to the effect that the Cunningham Pass route is now much less used than that through Bouse.

Some travelers between Arizona and California points use the ferry over Colorado River at Ehrenberg instead of that at Parker. They follow one of the Parker cut-off routes in Arizona, either to Vicksburg or to Bouse, which are stations on the Santa Fe, Prescott & Phoenix Railway, and thence go to Quartzsite and on to Ehrenberg. The road between Bouse and Quartzsite is 6 miles shorter than the road between Vicksburg and Quartzsite. For travelers between Ehrenberg and places east of Vicksburg the route by way of Bouse from Quartzsite is 14 miles longer than that direct to Vicksburg, but the road is much better, especially in wet weather. Because of high water, the ferry at Ehrenberg is usually not operated during the later part of May, nor during June, July, and the early part of August.

There are three main routes between Phoenix and Los Angeles. The portions of these routes in Arizona are those which lead from Phoenix to Yuma, Parker, and Ehrenberg, respectively. The choice depends largely on individual preference, the weather, and the condition of the roads at the particular time of the trip. The Yuma road is somewhat more popular. It passes many watering places, and the road is usually easy to follow. The bridges at Antelope Hill and Yuma obviate all necessity for ferrying.⁵ The road along Gila River is in bad condition for considerable stretches, and the scenery is dreary and rather uninteresting. In California about 30 miles of very sandy road is encountered in the sand hills east of the Imperial

⁵ The bridge at Antelope Hill was washed out in 1920, but a crossing is maintained at this point. Many travelers between Phoenix and Yuma now go by way of Buckeye and Gila Bend.

Valley. The Parker cut-off routes are used almost as much as the route by way of Yuma, and the scenery is rather more attractive. The distance is but little longer. It is slightly more difficult to keep on the correct road, and reliable watering places are not found at such frequent intervals. At times some stretches of the road are in bad condition, but as there are several alternative routes the worst of these can usually be avoided. Local advice should be sought as to which route should be followed. The route by way of Ehrenberg is about 100 miles shorter than either of the others but is not nearly as much used because of the comparatively long stretches along which no supplies, or very few, can be obtained. In California no supplies of any kind can be procured along the 95-mile stretch west of Blythe. Some parts of the road are rough, and other parts are very sandy. There is a variety of attractive desert scenery along the Arizona portion of the route.

An important north-south road is that between Quartzsite and Dome, on the main Phoenix-Yuma route. The Harquahala road between Palomas and Salome also runs north and south but is now seldom used.

From Buckeye, on the Phoenix-Yuma route, a road leads south to Gila Bend and thence to Ajo, the Papago country, and Mexico.⁶ From Gila Bend a road also leads westward to Yuma, following in general the course of the Southern Pacific Railroad. At Sentinel, on this road, a road crosses Gila River to Agua Caliente, on the main Phoenix-Yuma route. .

TYPES OF ROADS.

The following paragraphs give descriptive definitions of the various types of roads encountered in this region and propose names for them. These names are used in the logs to aid in making the descriptions brief and clear.

MOUNTAIN ROADS.

Mountain roads have somewhat varying characteristics. They run through mountains of different composition, and consequently the roadbed may be laid on rock, residual soil, thin alluvium, or caliche. Such roads are seldom muddy, but they are frequently rough. The grades are usually steep, and short grades into and out of the gulches are very steep. The crossing of such gulches presents the principal difficulty in traveling on roads of this type.

⁶ See U. S. Geol. Survey Water-Supply Paper 490, pp. 317-429 (Water-Supply Paper 490-D).

PLAINS ROADS.

Most of the roads in this region pass through alluvium-filled valleys in the desert and may be called "plains roads." (See Pl. XIX, A, p. 286.) The roadbed is usually compact and well drained, but the washes make traveling difficult, because they are filled with heavy sand and the approaches are very steep. As every rainfall changes the character of the wash, permanent improvements can not easily be made.

Continuous traffic over these plains roads may form chuck holes, but they do not usually cause serious trouble. The adobe flats occasionally encountered in desert valleys are more troublesome, as they are dusty and chunky in dry weather and muddy in wet weather. Frequent or long-continued traffic over these roads may develop high centers to such an extent as to make traveling difficult for automobiles of low construction.

RIVER-BOTTOM ROADS.

Roads built along the courses of rivers, principally on the fine-grained sandy clay and loam of the flood plains, may be called river-bottom roads. These roads may be excellent in dry weather if well graded, provided there is little traffic. The material is so soft, however, that well-traveled roads in river bottoms soon become very badly cut up. They are dusty in dry weather and may become so muddy in wet weather as to make passage over them very difficult. River-bottom roads frequently pass for part of their course over the upper river benches, where the alluvium is coarser and more compact than in the flood plain and the roads are similar in character to plains roads. Two parallel roads frequently run along a river valley, one following the flood plain, the other the upper benches. Which road is the better will depend on the season, the weather, and the amount and character of the traffic.

MALPAIS ROADS.

Malpais roads pass over mesas of recent lava, or "malpais," and are usually comparatively good. Steep grades, bad washes, and heavy sand are rare. Depressions in the surface of the lava may become filled with sand, making the roadbed rather heavy, but such stretches are usually short and seldom present serious difficulties. Roads of this type may be rough and are hard on tires.

ROAD LOGS.

PHOENIX-YUMA ROUTE.

PHOENIX TO YUMA BY MAIN ROAD (199 MILES).

[See pp. 287-289 for log in opposite direction.]

- 0.0 **Phoenix.** Arizona Eastern Railroad station. Go north on Central Avenue to Washington Street. Turn west. Go past courthouse (0.4 mile) and continue west.
- 1.5 Capitol Building. Turn south on Seventeenth Avenue.
- 1.6 Jefferson Street. Turn west on Jefferson Street. Pavement ends here; good dirt road for 14 miles to Agua Fria River.
- 1.9 Nineteenth Avenue. Turn south on Nineteenth Avenue. Cross, first, the Santa Fe, Prescott & Phoenix Railway, then the Arizona Eastern Railroad.
- 2.4 Buckeye road. Turn west on Buckeye road. Continue west.
- 13.8 **Cashion.** Water and supplies. Water is piped from Cashion ranch and is warm and somewhat mineralized. Continue west.
- 15.4 Abrupt turn to right and then to left on to concrete roadway across part of Agua Fria River. Continue west at end of concrete roadway, fording stream (usually easy to ford).
- 16.2 **Coldwater.** Water and supplies. Water from well here is cold and good. Continue west. Road somewhat rough.
- 22.2 Turn south (left) at end of fenced land on good plains road, avoiding road straight ahead (west).
- 22.4 Turn west (right).
- 22.9 Fork. Right-hand road is plains road to Buckeye, avoiding Liberty. Left-hand road is graded dirt road leading to Buckeye by way of Liberty. Take left-hand road.
- 25.0 Cross Arizona Eastern Railroad and continue south.
- 25.1 Cross Buckeye Canal and continue south.
- 26.6 Turn due west (right).
- 28.3 **Liberty.** Water and supplies. Continue west.
- 33.0 Buckeye Canal. Road that forked at mile 22.9 comes in from northeast, across the canal. Turn due south (left).
- 33.6 Turn due west (right).
- 34.2 **Buckeye.** Water, supplies, lodging, and auto repairs. Continue west.
- 34.5 Crossroads. Road south (left) leads across Gila River to Gila Bend, about 36 miles distant. Geological Survey sign. For Palo Verde, Yuma, and Parker continue straight ahead (west).
- 36.5 Turn south (left).
- 37.5 Turn west (right).
- 39.5 Turn south (left).
- 40.0 Turn west (right).
- 41.0 Crossroads at **Palo Verde.** Water and supplies. Continue straight ahead (west).
- 43.7 Ford Hassayampa River. Usually very little water in river.
- 43.9 Fork. Geological Survey sign. Road west leads to Bouse, Wenden, Parker, and Ehrenberg. (See pp. 290-296.) It is an alternate route to Los Angeles. For Yuma turn south (left) along base of lava cliff. Go south about 2 miles, then bend to right and go west around lava cliff. Road poor around cliff. Continue west.

- 47.5 **Arlington.** Store. Water and supplies. Take enough water to last until Agua Caliente is reached, as watering places in mountains are unreliable. Continue west nearly a mile, then bend south. Alternate road from Arlington store goes south 1 mile, then west 1 mile. A road back of Arlington store leads northwest to Winters Wells.
- 49.3 Crossroads. Geological Survey sign. Alternate road from Arlington comes in on east. Road south goes to Enterprise ranch and leads to old road across Gila Bend Mountains. (See p. 286.) Enterprise ranch is about 15 miles from Arlington. Turn west (right) for new road across Gila Bend Mountains. Continue west up bluff past a house (mile 49.9). After climbing bluff, road is fairly good.
- 54.8 Fork in mesquite thicket of Centennial Wash. Geological Survey sign. Road northwest (right) connects with abandoned Harquahala freight road, now used only to reach some of the wells of the Flower Pot Cattle Co. Continue straight ahead.
- 62.1 **Surprise Well.** Good water when windmill is pumping.
- 64.8 **Dixie mine.** Good water in well on north side of road when mine is being worked and well is attended to.
- 67.6 Fork. Faint road straight ahead goes to Clantons Well and beyond. (See p. 308.) It is used only by cattlemen. Turn south (left). Continue south and southwest over good, winding mountain road.
- 71.0 Road makes steep descent and then crosses **Fourth-of-July Wash.** Water can be obtained by digging a foot or two in sand in this wash, 200 to 300 yards downstream from road, except after long dry season.
- 72.2 **Willow Tanks.** Geological Survey sign. Two natural tanks, 50 yards upstream from road, also one in a small branch gully that joins main wash about 200 yards downstream from road. Wooden platform on north bank of main wash short distance downstream from point where gully containing one tank enters the wash. Tanks generally contain water, except after long dry season. Water is good if clean but usually fit for stock or automobile only. Continue west.
- 75.8 **Yellow Medicine Tank.** Geological Survey sign. Small rock tank 75 yards south of sign in gully. Water good if clean but usually fit for stock or automobile only. Dries up in long dry seasons. **Yellow Medicine Well** is on east side of Yellow Medicine Wash, about a mile south of the tank. It contains permanent water, but it is poorly protected and the water usually becomes contaminated. From sign near Yellow Medicine Tank continue west over good graded State road with steep grades and many turns.
- 78.7 Cross big wash where graded road ends.
- 78.9 Fork. Geological Survey sign. Branch road to left is old road now open only about half a mile to wash near **State Well.** This well contains permanent water but is unprotected from contamination, and there are no facilities for getting water. Rope and bucket required.
- 97.3 Geological Survey sign. Branch road on right comes from homestead of G. T. Morris. This is 0.7 mile from the fork. There are two wells here, but neither is used, and the water is reported to be undrinkable. Mr. Morris keeps a supply of somewhat salty but drinkable water at his house.
- 97.7 Geological Survey sign. Road coming in on east (left) is old road from Arlington. (See pp. 286-287.) Continue southwest, soon turning nearly due west.
- 98.0 **Agua Caliente.** A road leads south to Sentinel. Agua Caliente has hot springs, water, supplies, hotel, and garage with gasoline, and a few other supplies. Continue westward through Agua Caliente.

- 99.4 Fork. Geological Survey sign. Avoid left-hand road (straight ahead), which is old road to Palomas. Turn northwest (right). Continue northwest about 3 miles, then turn southwest, avoiding faint roads forking off on right. One of these roads leads to **Frank Baragan's well**, $1\frac{1}{4}$ miles north of the main road. (See Pl. XXI.) This well has windmill with windlass and buckets and good water.
- 110.8 Junction with north-south road. Geological Survey sign. Road coming in on north (left) comes from Harquahala and Salome. (See pp. 307-308.) Turn south.
- 112.6 Geological Survey sign. Old road from Agua Caliente comes in on left.
- 113.4 **Palomas**. Water, supplies, meals, gasoline, post office, and camp ground. Road south leads to Aztec (7 miles), a station on the Southern Pacific. Turn southwest (right) on outskirts of village.
- 117.4 Fork. Geological Survey sign. Road north (right) is old road to Yuma by way of Deep Well and Castle Dome; now no water or habitation for 55.5 miles from this fork. This old road joins the road from Quartzsite to Dome at Geological Survey sign at mile 39.4 going south. (See p. 303.) To continue on main road to Norton and Yuma turn south (left), then southwest along the flood plain of Gila River. The particular road used varies from time to time and with the seasons. Follow most used tracks or get local advice. Road full of holes in dry weather and muddy in wet weather. Avoid branch roads leading off to ranches along the route. Water obtainable at several of these ranches in emergency. At mile 125.8 is a reverse fork leading to Farra's ranch, three-fourths of a mile south of the main road, where there is a well that yields fairly good water. Continue to Norton.
- 135.2 **Norton**. Old buildings, post office. Somewhat salty but drinkable water. No other supplies. Road leading due north goes to Deep Wells and beyond. It is little traveled. Road south leads to Mohawk (7 miles), a station on the Southern Pacific Railroad. Continue west.
- 136.3 **Hicks ranch**. Well with salty but drinkable water. Supply small, so that owner prefers that it be used only in emergency. Continue west and southwest.
- 142.0 Deserted schoolhouse.
- 146.3 Ranch building with windmill. Continue west about 3 miles. Turn south. Road goes over silty flood plain, full of holes in dry weather, very muddy in wet weather. Last 2 miles before reaching bridge is graded road but in poor condition.
- 152.5 Cross Gila River on Antelope Bridge (concrete). Water is usually obtainable in river bed, but it is not of good quality for human use. After crossing bridge turn to right and run southwest, avoiding branch roads to ranches. Road has chuck holes and is very dusty in dry weather and muddy in wet weather.
- 161.4 **Wellton**. Water, gasoline, supplies, post office, hotel, and railroad station. A road leads south to Tinajas Altas.⁷ Turn to right and go west. This road is undergoing improvement west of the town, and new roads to homesteads are being made. It lies in a flood plain of Gila River, between the river on the north and the Southern Pacific Railroad on the south, so it is impossible to get far off it. First part of road to Dome has chuck holes and dust in dry weather and mud in wet weather. For 8 miles east of Dome there is good graded road.

⁷ See Water-Supply Paper 490-D.

- 178.9 **Dome.** Water, gasoline, supplies, post office, and railroad station. Continue west on good graded road.
- 185.6 **Blaisdell,** railroad station. Road south to Fortuna mine. Continue west on poor sandy river-bottom road to outskirts of Yuma, then 1 mile on asphalt pavement to Yuma depot (mile 198.9).
- 198.9 **Yuma.** Depot.

PHOENIX TO YUMA BY OLD ROAD ACROSS GILA BEND MOUNTAINS (202 MILES.)

[See pp. 289-290 for log in opposite direction.]

On the route from Phoenix to Yuma there are two optional roads between Arlington and Agua Caliente through the Gila Bend Mountains, known as the old and new roads. The new road, which lies north of the old, is about 3 miles longer. Water is obtainable on it at more frequent intervals, and it is the one usually traveled by automobilists. For these reasons it is the safer of the two. The old road, being shorter and having less steep grades, is sometimes used by parties traveling with stock. It has more sand than the new one but fewer curves. (See Pl. XIX, A.)

For road from Phoenix to Arlington, see log, pp. 283-284.

- 47.5 **Arlington** store. Water and supplies. Continue west nearly a mile, then bend south. Alternate road from Arlington store goes south 1 mile, then west 1 mile.
- 49.3 **Crossroads.** Geological Survey sign. Road from east (left) is alternate road from Arlington. Road west (right) is new road across Gila Bend Mountains. (See p. 284.) To follow the old road across the mountains or to go to Enterprise ranch continue straight ahead (south).
- 51.0 **Fork.** Geological Survey sign. Road straight ahead goes to Enterprise ranch, about 10 miles from this point. For Agua Caliente and Yuma turn west (right) and go over fair plains road, crossing Arlington Canal and leaving irrigated district at mile 52.4.
- 58.0 **Fork.** Wooden sign. Road to left leads to Webb mine, about a mile south. Continue straight ahead past faint road to right, leading to **Van Hagen windmill**, 0.3 mile north of main road. This well is unreliable for water supply.
- 59.4 Geological Survey sign. **Webb Well** is 150 yards to the right of road. **Good water.** Continue over good mountain road.
- 63.8 **Fork.** Road on left goes to **Woolsey Tank** (Pl. XIX, B), 100 yards away, and to camp ground. **Water for stock in natural tank**, for men in **shaft of Perhaps mine.**
- 63.9 Geological Survey sign. Another road on left leading to Woolsey Tank. Continue west over fairly good mountain road.
- 68.2 Road leaves mountains. Continue over good plains road.
- 73.8 **Fork.** Geological Survey sign. Road on left is an old road now washed out and impassable. Turn west (right) and continue over rather poor valley road.
- 75.4 Faint road to left leads 0.7 mile south to **apiary**, where there is a driven well that yields water of poor quality, which may be used for drinking in an emergency. The well is equipped with a pump, but it may be necessary to prime the pump.
- 77.7 Geological Survey sign. Road coming in on left was once a part of the main road but is now washed out and impassable at one place. Near this old road, 1.8 miles from the main road, is a cattlemen's camp, with a driven well that yields salty water. Continue on main road, passing south of lava buttes and skirting them on fair valley road to mile 83.9; then cross low lava mesa on good road to mile 86.8; then pass over fair river-bottom road.
- 94.0 Small ranch where **salty water** could be obtained in an emergency.



A. A TYPICAL GOOD "PLAINS ROAD."

The old road between Agua Caliente and Arlington, on the west side of the Gila Bend Mountains, Ariz.



B. WOOLSEY TANK, GILA BEND MOUNTAINS, ARIZ.

- 94.6 Geological Survey sign. Road coming in on north is the new road across the Gila Bend Mountains. Set speedometer to mile 97.7 and use log of main Yuma-Phoenix road. (See p. 284.)

YUMA TO PHOENIX BY MAIN ROAD (199 MILES).

[See pp. 283-286 for log in opposite direction.]

- 0.0 From **Yuma depot** go east for $1\frac{1}{2}$ miles on asphalt to outskirts of Yuma. Then continue east on poor sandy river-bottom road to Blaisdell.
- 13.3 Blaisdell railroad station. Road south from here to Fortuna mine. Continue east along good graded road.
- 20.0 **Dome.** Water, gasoline, oil, supplies, post office, and railroad station. Continue east past railroad station; a good graded road extends for 8 miles east of Dome; beyond that point the road has chuck holes and dust in dry weather and mud in wet weather, growing worse toward Wellton. This road is undergoing improvement west of Wellton, and new roads to homesteads are being made. It lies in a flood plain of Gila River between the river on the north and the Southern Pacific Railroad on the south, so it is impossible to get far off it. Continue east.
- 37.5 **Wellton.** Water, gasoline, oil, supplies, post office, hotel, and Southern Pacific station. Turn north and northeast, continuing to Gila River across Antelope Bridge, avoiding branch roads to ranches. Road has chuck holes and is very dusty in dry weather and muddy in wet weather.
- 46.4 Cross Antelope Bridge (concrete) over Gila River. **Water** usually obtainable in river bed, but it is not of good quality for human use. Continue north for 2 miles on graded road that is in poor shape. Turn east, passing ranch building with windmill (mile 52.6). Continue northeast and east, passing deserted school (mile 56.9) to Hicks ranch. Road goes over silt of flood plain, full of chuck holes in dry weather and very muddy in wet weather.
- 62.6 **Hicks ranch.** Well with salty but drinkable water. Supply small, so that owner prefers that it be used only in emergency. Continue east from the ranch.
- 63.7 **Norton.** Ranch buildings, old store, and post office. Salty but drinkable water, but no supplies obtainable. Road due north from Norton goes to Deep Wells and beyond; little traveled. Road south to Mohawk (7 miles), a station on the Southern Pacific. From Norton start northeast, then turn east past the schoolhouse, avoiding road which continues to north (left). The present route continues east and northeast along the flood plain of Gila River. Avoid branch roads leading off to ranches along the route. **Water** obtainable at several of these ranches in emergency. Continue to fork. The exact road used varies from time to time and with the seasons. Follow most-used tracks or get local advice. Road full of chuck holes in dry weather and muddy in wet weather.
- 73.1 Fork. Keep straight ahead on main road. Road on right goes three-fourths of a mile to **Farra's ranch**, where there is a well that yields fairly good water.
- 81.5 Fork. Geological Survey sign. Continue northeast, avoiding road to north (left), which is old road to Yuma by way of Deep Well and Castle Dome; now no water or habitation for 55.5 miles from this fork.
- 85.5 **Palomas.** Water, gasoline, oil, supplies, meals, post office, and camp grounds. Continue north through Palomas, avoiding road forking to right, Geological Survey sign (mile 86.3), which is old road from Palomas to Agua Caliente.
- 88.1 Fork. Geological Survey sign. Turn to right, avoiding fork on left, which is road to Harquahala and Salome. Continue northeast, avoiding faint road forking to left at mile 95.1, which goes to **Frank Baragan's well** ($1\frac{1}{4}$ miles). Well has windmill, windlass and buckets, and good water.

- 99.5 Fork. Geological Survey sign. Continue northeast, avoiding road forking to right, which is old road from Palomas.
- 100.9 **Agua Caliente.** Hot springs, water, gasoline, oil, supplies, hotel, and garage, but no automobile repairs except very minor ones. Continue north through Agua Caliente, passing road to south at mile 100.9.
- 101.2 Fork. Geological Survey sign. Continue north, avoiding road to east (right), which is old road to Arlington.
- 101.6 Fork. Geological Survey sign. Continue north, avoiding road forking to left to homestead of G. T. Morris (0.7 mile). There are two wells here, but neither is used, and the water is reported to be undrinkable. Mr. Morris keeps a supply of somewhat salty but drinkable **water** at his house.
- 120.0 Fork. Geological Survey sign. Continue straight ahead, avoiding road forking to right, an old road now open only to bank of wash near **State Well** (0.5 mile); permanent water but unprotected from contamination; no facilities for getting it; rope and bucket must be provided.
- 120.2 Cross wash. Graded road starts here. Continue east on graded State road (steep grades, many turns, good road) to Geological Survey sign, near **Yellow Medicine Tank**. About a mile south of the tank is **Yellow Medicine Well**, on the east side of Yellow Medicine Wash. Permanent water, but well is poorly protected, consequently water is usually contaminated.
- 123.1 **Yellow Medicine Tank.** Small rock tank in gully 75 yards south of Geological Survey sign. Water good if clean, usually fit for stock or automobile only. Dries up in long dry spells. Continue east past the sign.
- 126.7 **Willow Tanks.** Unreliable. Geological Survey sign. Water in two natural tanks 50 yards upstream from road, except after long dry season, also in **another tank** in a small side gully south of main wash about 200 yards downstream from road; wooden platform on north bank of main wash short distance downstream from point where gully containing the tank enters the wash. Water in all three tanks good if clean, usually fit for stock or automobile only. Continue northeast and east past Geological Survey sign at Willow Tanks.
- 127.9 Fourth of July Wash. **Water** can be obtained by digging in sand of this wash 200 to 300 yards downstream from road, except after long, dry season. Cross Fourth of July Wash. Here road makes steep ascent. Continue northeast and north over good winding mountain road.
- 131.3 Turn east (right); faint road to left goes to Clantons Well and beyond. Used only by cattlemen.
- 134.1 **Dixie mine.** Good water in well on north side of road when mine is working and well attended to. Continue east.
- 136.8 **Surprise Well.** Good water when windmill is pumping. Continue past Surprise Well on fair to good plains road.
- 144.0 Fork. Continue straight ahead. Road to northwest (left) connects with abandoned Harquahala freight road, now used only to reach some of the wells of the Flower Pot Cattle Co. Continue east past house at mile 149.0, descending bluff.
- 149.4 Fork. Geological Survey sign. Turn north. Road straight ahead is alternate road to Arlington. (Road to south goes to Enterprise ranch; old road across Gila Bend Mountains turns west from it 2 miles south of this fork. For log of this road, see p. 286.) Continue north and east past two green bungalows to Arlington store (mile 151.4), supplies and water. Alternate road goes south 1 mile and west 1 mile from Arlington store. Continue east past Arlington store. Go east around lava cliff on river bottom road which is poor around cliff; then go north to fork.

- 155.0 Fork. Geological Survey sign. Turn east (road west is Parker cut-off, alternate route to Los Angeles by way of Parker and Bouse or Wenden). Continue east, crossing Hassayampa River (mile 155.2); usually very little water. (Road east by way of Liberty as far as Buckeye Canal is graded and usually in fair repair.)
- 157.9 **Palo Verde.** Supplies and water. Continue east through Palo Verde.
- 158.9 Turn north.
- 159.4 Turn east for 2 miles.
- 161.4 Turn north.
- 162.4 Turn east and continue through crossroads (mile 164.4). Geological Survey sign. Road to south here leads across Gila River to Gila Bend.
- 164.7 **Buckeye.** Supplies, food, lodging, auto repairs, and water. Continue east.
- 165.3 Turn north.
- 165.9 Turn east. Branch road on left (northeast) leads across desert, joining main road at mile 176.0.
- 170.6 **Liberty.** Supplies and water. Continue east.
- 172.3 Go north, crossing Buckeye Canal (mile 173.9) and Arizona Eastern Railroad (mile 173.8).
- 176.0 Turn east. Road coming in from west is alternate route across desert from mile 165.9.
- 176.5 Turn north.
- 176.7 Turn east. Road on this stretch usually chunky in part.
- 182.7 **Coldwater store.** Supplies and water. Continue east, ford west branch of Agua Fria River (usually an easy ford), cross east branch on concrete roadway, turn to right, make abrupt turn to left, and turn just east of Agua Fria River.
- 185.1 **Cashion.** Supplies and water. Go east for about 13 miles (good dirt road).
- 196.5 Fork. Turn north, crossing first the Arizona Eastern Railroad tracks, then the Santa Fe, Prescott & Phoenix Railway tracks. Pavement begins at Nineteenth Avenue.
- 197.0 Turn on Nineteenth Avenue.
- 197.3 Go east on Jefferson Street.
- 197.4 Go north on Seventeenth Street to Washington Street. Go east on Washington Street past the Capitol Building and the courthouse (mile 198.5). Turn south on Central Avenue to the Arizona Eastern Railroad station.
- 198.9 **Phoenix.** Arizona Eastern Railroad station.

YUMA TO PHOENIX BY OLD ROAD ACROSS GILA BEND MOUNTAINS (202 MILES).

[See p. 286 in regard to this road. For road from Yuma to Agua Caliente see log on p. 287.]

- 100.9 **Agua Caliente.** Hot springs, water, supplies, hotel, and garage, with gasoline and a few other supplies. Continue east, later turning northeast.
- 101.2 Fork. Geological Survey sign. Follow right-hand road, avoiding road to left, which is new road across Gila Bend Mountains. (See mile 101.2 of log on p. 288.)
- 102.2 Small ranch where **salty water** could be obtained in an emergency. Fair valley road to mile 109.8.
- 109.8 Low lava mesa. Good mesa road to mile 112.7, then on fair river bottom road, skirting base of buttes.
- 118.5 Fork. Geological Survey sign. Turn to left, avoiding road to right, which is abandoned portion of this road, now washed out and impassable at one place. Near this old road 1.8 miles from the fork at mile 118.5 is a cow punchers' camp. Driven well, **salty water**. Continue north and northeast on fair to poor river bottom road. At mile 121.3 faint road on right leads south 0.7 mile to **apiary and driven well** with water of poor quality, which can be used for drinking in an emergency. The well is equipped with a pump, but this may need to be primed.

- 122.4 Old road comes in on right (south). Geological Survey sign. Turn northeast (left), avoiding old road on right, now washed out and impassable. Go on good plains road to mountains (mile 128.0), then on fairly good mountain road.
- 132.3 Fork. Geological Survey sign. Road to right goes to **Woolsey Tank**, 75 yards to camp ground, water for stock in **natural tank**, for men in **shaft of Perhaps mine**. Continue on main road, passing another road to Woolsey Tank, then on good mountain road.
- 136.8 **Webb Well**. Geological Survey sign. Well is 150 yards to left of road; good water. Continue, passing faint road on left (mile 137.7) to Van Hagen windmill, 0.3 mile to north; this is unreliable.
- 138.2 Continue straight ahead, avoiding road on right to Webb mine, on fair to good plains road, crossing Arlington canal and entering irrigated district at mile 144.2.
- 145.2 Junction with north-south road. Geological Survey sign. Turn north (left). Road to south (right) goes to Enterprise ranch.
- 146.9 Crossroads. Geological Survey sign. Road on left is the new road across the Gila Bend Mountains. Reset speedometer to 149.2 and continue north, using log of main Phoenix-Yuma road from this point. (See p. 288.)

ROUTE BETWEEN PHOENIX AND PARKER BY WAY OF BUCKEYE AND SALOME OR WENDEN.

PHOENIX TO SALOME BY WAY OF BUCKEYE AND PALO VERDE (104 MILES).

[See pp. 295-296 for log in opposite direction.]

For log of road from Phoenix to Palo Verde see Phoenix-Yuma log, page 283.

- 41.0 Crossroads at **Palo Verde**. Continue west.
- 43.7 Ford Hassayampa River. Usually very little water in river.
- 43.9 Fork. Geological Survey sign. Avoid road to south, which is Yuma road. (See pp. 283-286.) Continue west and northwest over rocky road around basalt hill. Avoid faint branch roads going north on north side of this hill.
- 45.1 Fork. Geological Survey sign. Turn northwest (right). Road straight ahead is an alternate route to Winters Wells but is seldom used. If main road is in bad shape it may be advisable to use this alternate. In the next 8 miles main road is chunky, with high centers in dry weather and very muddy in wet weather.
- 53.2 Geological Survey sign. Road coming in on left goes to Arlington and also joins with the road straight ahead from mile 45.1, forming alternate route from Palo Verde to Winters Wells. Continue straight ahead along north side of Palo Verde Hills.
- 56.1 **Winters Wells**. Geological Survey sign. **Water**. No other supplies. Cattleman's camp.
- 56.2 Fork. Geological Survey sign. Continue straight ahead over fair to poor plains road, avoiding road on left.
- 62.5 Geological Survey Sign at **Palo Verde mine**. **Water** but no other supplies. Caretaker lives here. Continue over good plains road, avoiding branch road on right about 1 mile farther west.
- 68.0 **Big Horn Well**. Geological Survey sign. **Water** but no facilities for obtaining it. The road all the way from this well to Salome is a fair to good plains road.
- 71.7 **Burned Place Well**. Geological Survey sign. **Water** at faucet. Continue about 20 miles to Geological Survey sign, where road comes in on right. Thence about 1 mile farther to another Geological Survey sign.

- 93.1 Geological Survey sign. Road forks. Road on right is poor road to Wenden. Continue straight ahead for either Salome or Wenden. About 3 miles farther along main road there is another Geological Survey sign where a road comes in on left, crossing Centennial Wash.
- 97.0 **Tolladays Well. Water.** Usually someone living here.
- 97.1 Fork. Geological Survey sign. Take right-hand road.
- 99.0 (approximate). Geological Survey sign. Continue straight ahead, avoiding fork to right.
- 101.4 Fork. Geological Survey sign. Road on north (right) leads to Wenden, 4.0 miles distant, and is an alternate route to Parker. (See pp. 292-293.) Left-hand road at mile 101.4 leads northwest to Salome. Avoid faint roads south (left).
- 104.1 Railroad crossing. Geological Survey sign. Turn to right across railroad for Salome. If bound for Parker or Ehrenberg turn to left along railroad without crossing. (For log of remainder of route to Parker see pp. 291-292; to Ehrenberg, pp. 299-302.)
- 104.4 **Salome depot. Water,** gasoline, supplies, hotel, and post office.

TOLLADAYS WELL TO WENDEN (9 MILES).

[See p. 295 for log in opposite direction.]

This log is for the use of travelers going to Wenden or to Parker by way of Cunningham Pass. From Phoenix to Tolladays Well use log on pages 290-291.

- 0.0 **Tolladays Well.** Go west.
- 0.1 Fork. Geological Survey sign. Bear right on main road. Road on left goes to ranch.
- 2.0 Fork. Geological Survey sign. Keep straight ahead on main road. Road to right is abandoned road to Wenden.
- 4.4 Fork. Geological Survey sign. Turn to right. Road on left leads to Salome.
- 7.7 **Petes Well,** water. Continue north into Wenden, passing Geological Survey signs at reverse forks at miles 8.7 and 9.0.
- 9.2 Crossroads in Wenden. Geological Survey sign. Wenden railroad station is 0.1 mile to the east (right). If bound for Parker continue straight ahead at crossroads as indicated by the sign. **Water,** gasoline, and other automobile repairs, garage, stores, and hotels in Wenden.

SALOME TO PARKER (58 MILES).

[See pp. 293-294 for log in opposite direction.]

- 0.0 **Salome** railroad station. Go southwest across railroad.
- 0.3 Crossroads. Geological Survey sign. Turn to right along railroad. Road on south leads from Palomas, on southeast from Palo Verde and Phoenix, and on east from Phoenix, Wickenburg, and Wenden. Continue along railroad on good plains road to border of Granite Wash Hills.
- 3.8 Go southwest through Granite Wash Pass on good mountain road.
- 6.2 Emerge from hills and continue westward over good plains road near railroad.
- 10.6 **Vicksburg** railroad station. Water, groceries, and post office, but no automobile supplies. Continue westward as directed by Geological Survey sign over winding but good plains road along railroad, passing railroad well at McVay; usually no water obtainable.
- 30.7 **Bouse** railroad station. Water, gasoline, supplies, automobile repairs, hotels, and post office. Road north across railroad leads along Arizona & Swansea Railroad to Swansea. (See p. 299.) Leaving Bouse for Parker, turn south as directed by Geological Survey sign. Follow most traveled road south and west through town. In Bouse two roads leading south (left) to Quartzsite

branch off the road to Parker. (See pp. 300-301.) These forks are marked by Geological Survey signs. After leaving Bouse follow graded dirt road near railroad. Roads leading to mines leave main road at miles 33.7, 34.4, and 35.2 but are not confusing. The road between Bouse and Parker was repaired and partly changed in winter of 1918. As these changes are not known, the exact log can not be given, but there is little danger of losing the way. In December, 1917, there was a good road, graded in part, from Bouse to mile 45.5, and this was being extended. The unimproved stretch between miles 45.5 and 50.4 was poor, with numerous sharp pitches and some sand.

- 50. 4 Road swings west away from railroad on fair desert road.
- 51. 6 Enter gully and continue down its sandy bed.
- 53. 3 Turn north (right) out of gully and continue over fair sandy road.
- 58. 0 Geological Survey sign at street corner. Turn east (right).
- 58. 2 **Parker** railroad station. Water, gasoline, supplies, garages, hotels in town. Travelers bound for California turn north (left) at street corner opposite railroad station (Geological Survey sign) and continue to ferry over Colorado River. The exact location of this changes with the river. Follow ferryman's signs. Distance about $1\frac{1}{2}$ miles. Charges \$2 per automobile (December, 1917). (For roads in California see Water-Supply Paper 490-B.) From Parker there is also a road down the river to Ehrenberg Ferry (see p. 302) and one east through Cunningham Pass to Wenden (see pp. 294-295).

WENDEN TO PARKER BY WAY OF BUTLER WELL (57 MILES).

[See pp. 294-295 for log in opposite direction.]

- 0. 0 **Wenden** railroad station. Go southwest to railroad crossing.
- 0. 1 Railroad crossing. Geological Survey sign. Go north across railroad.
- 0. 3 Fork. Geological Survey sign on wooden post. Continue north, avoiding road to east (right) and also road just beyond it going west (left). Go straight ahead on fair to good plains road, poor when wet, to fork.
- 0. 7 Fork. Geological Survey sign on wooden post. Continue straight ahead, avoiding road to left here and another faint one at mile 1.6.
- 4. 2 Fork. Geological Survey sign. Continue north and northeast, avoiding road to northwest (left). The ascent of Harcuvar Mountains through Cunningham Pass commences soon after passing this signpost. Road across mountains is good.
- 8. 2 Fork. Wooden sign marked "The Black Reef." Continue straight ahead, avoiding road on left to mine.
- 8. 9 Fork. Wooden sign marked "Wenden, 9 mi. The Desert Mining and Development Co." Continue straight ahead, avoiding road on left leading to mine. Beyond this fork 0.2 mile is another road leading to same mine. On right of road, 100 yards away, near this fork, is a covered **well with good water** but no facilities for getting it. It is 62 feet to water, which can be obtained with a rope and bucket. Continue to summit.
- 9. 5 Summit of Cunningham Pass. Just beyond the summit a mine road forks to left, marked by Geological Survey sign. Continue on main road down slope.
- 10. 0 Fork. Continue on main road. Road on left leads to a mine.
- 10. 1 Fork. Geological Survey sign. Right-hand road goes to Alamo, 30 miles north. Take left fork.
- 10. 5 Fork. Geological Survey sign. Take right-hand road.
- 11. 4 Fork. Geological Survey sign on wooden post; also wooden sign marked "Black Giant mine." Take left fork, avoiding road on right, which leads to the mine.

15. 9 Fork. Geological Survey sign; also metal sign, without post, marked "Parker 42 mi. [pointing along left-hand road], Renada ranch 6 mi. [pointing along right-hand road]." Renada ranch has a well and water supply. For Butler Well and Parker take left fork and continue over fair plains road.
21. 1 **Butler Well.** Geological Survey sign at crossroads. Road on right goes to **Renada ranch** (4.9 miles). Road to left goes down valley to **Graham Well**. Middle road, passing on left side of Butler Well, leads to Parker. Road for next 4 miles is good plains road, then good for 6 miles through spur of Buckskin Mountains.
22. 2 Continue on main road, avoiding faint road on right.
24. 4 Geological Survey sign. Continue straight ahead, avoiding road that comes in on right.
30. 4 Fork. Geological Survey sign. Road to right goes to Midway and Swansea. Take left-hand road.
31. 0 Fork at railroad. Geological Survey sign. Road on right along railroad goes to **Midway (water tank)**, about a mile distant, and to Swansea. For Parker turn to left along railroad.
31. 2 Fork. Geological Survey sign. Road straight ahead along railroad goes to Bouse. For Parker turn to right and cross railroad.
31. 6 Geological Survey sign. Road coming in on left joins road to Bouse along railroad at a Geological Survey sign, 0.3 mile south of point where Parker road crosses railroad. Parker road goes northwest 3 miles, then swings west, and goes through pass in small spur of Buckskin Mountains. Some sand in pass. Road from pass nearly to Osbornes Well is fair plains road. Avoid faint roads crossing or branching from it.
42. 9 Fork. Geological Survey sign. Road on right leads to Osbornes Well, 1 mile distant. **Water** and shelter. Road straight ahead is main road to Parker.
43. 9 Geological Survey sign. Road on right comes from Osbornes Well, 0.4 mile distant. Turn to left and continue on main road to Parker. The road is fairly good for 7 miles, then very sandy for 6 miles.
57. 2 **Parker** railroad station. Water, hotels, stores, and garages. Ferry over Colorado River; charge, \$2 per automobile (in 1917).

PARKER TO SALOME (58 MILES).

[See pp. 291-292 for log in opposite direction.]

0. 0 **Parker** railroad station. Go west.
0. 2 Geological Survey sign at corner. Turn south (left) and continue over fair sandy road.
4. 9 Turn east (left) and go up sandy bed of gully.
6. 6 Leave gully and continue over fair plains road to railroad.
7. 8 Road reaches railroad and runs southward along it. From this point follow main traveled road along railroad to Bouse. Road was repaired and partly changed in winter of 1918. As these changes are not known the exact log can not be given, but there is little danger of losing the way. Roads leading to mines leave the main one at miles 23.0, 23.8, and 24.5 but are not confusing. In December, 1917, there was a good road, graded in part, from mile 12.7 to Bouse, and this was being extended. The unimproved stretch between miles 7.8 and 12.7 was poor with numerous sharp pitches and some sand.
27. 5 **Bouse** railroad station. Water, gasoline, supplies, automobile repairs, hotels, and post office. In the town of Bouse two roads leading south (right) to Quartzsite are passed. These forks are marked by Geological Survey signs. Leaving Bouse for Salome turn to right, keeping on west side of railroad as directed by Geological Survey sign at street corner opposite and south of railroad station. Continue along railroad over winding but good plains road to Vicksburg, passing railroad well at McVay; usually no water obtainable.

47. 6 **Vicksburg** railroad station. Water, groceries, and post office, but no automobile supplies. Continue eastward as directed by Geological Survey sign over good plains road near railroad to border of Granite Wash Hills.
52. 0 Go northeast through Granite Wash Pass over good mountain road.
54. 4 Emerge from hills and continue over good plains road.
57. 9 Crossroads. Geological Survey sign. Road north goes across railroad into **Salome**. Water, gasoline, supplies, hotel, post office, and railroad station. Road straight ahead along railroad goes to Wenden and Wickenburg and thence to Phoenix or Prescott. (See pp. 298-299.) Road southeast goes to Palo Verde, Buckeye, and Phoenix. (See pp. 295-296.) Road south goes to Harquahala and Palomas.

PARKER TO WENDEN (57 MILES).

[See pp. 292-293 for log in opposite direction.]

0. 0 **Parker**, Santa Fe, Prescott & Phoenix Railway depot, garages, hotels, stores, water in town. Cross railroad track south of station and go east. Continue on the main road, avoiding any faint roads branching off from it. Road is very sandy for 6 miles from Parker, then fair to good plains road for 8 miles.
13. 3 Fork. Geological Survey sign. Turn to right, avoiding road on left to **Osbornes Well** (0.4 mile). Water, shelter, no other supplies to reverse fork. Geological Survey sign. Road from fork near Osbornes Well is fair to good plains road. Continue straight ahead.
14. 3 Fork. Geological Survey sign. Road forking back to left is fairly good road to Osbornes Well (1 mile). Continue to pass in small spur of Buckskin Mountains. Go through pass (some sand in pass). Road here swings east, then goes southeast 3 miles to fork, Geological Survey sign. Continue straight ahead to Arizona & Swansea Railroad, avoiding road forking to right. Latter joins road to Bouse along railroad at fork (Geological Survey sign) 0.3 mile south of point where Parker road crosses railroad. Cross this railroad to fork.
26. 0 Fork. Geological Survey sign. Turn to left along railroad. Road on right goes to Bouse. Road for next 6 miles is good mountain road through spur of Buckskin Mountains, then good plains road for 4 miles.
26. 2 Fork. Geological Survey sign. Turn to right. Road on left along railroad goes to **Midway** (water tank), about a mile distant, and to **Swansea**.
26. 8 Fork. Geological Survey sign. Continue straight ahead, avoiding road on left to Midway and Swansea.
32. 8 Fork. Geological Survey sign. Avoid fork to left. Continue on main road.
35. 0 Fork. Continue on main road, avoiding faint road on left.
36. 1 **Butler Well** at crossroads. Geological Survey sign. Road on right goes down valley to Graham Well. Road on left goes to **Renada ranch** (4.9 miles). From Butler Well good plains road to point near fork.
41. 3 Fork. Geological Survey sign and metal sign without post marked "Parker 42 miles, Renada ranch 6 miles [pointing along road forking back to left]." Road enters mountains shortly before reaching fork. Continue.
45. 8 Fork. Geological Survey sign (wooden post) and wooden sign marked "Black Giant mine." Take right fork, avoiding road on left to mine.
46. 5 Fork. Geological Survey sign. Turn to left, avoiding road on right.
47. 1 Fork. Geological Survey sign. Take right fork; left fork goes to Alamo (30 miles).
47. 2 Fork. Continue on main road, avoiding road on right to mine. Continue on main road up slope, avoiding mine road forking to right, marked by Geological Survey sign just before reaching summit.
47. 7 Summit of Cunningham Pass. Continue on main road down slope. Road across mountains is good mountain road.

- 48.1 Fork. On left of road 100 yards away is covered well, good water, but no facilities for getting it. It is 62 feet to water, which can be obtained with a rope and bucket. From fork continue south.
- 48.3 Fork. Wooden sign marked "Wenden 9 mi., The Desert Mining and Development Co." Continue straight ahead, avoiding road on right to mine.
- 49.0 Fork. Wooden sign marked "The Black Reef." Continue southwest and south, avoiding road to northwest (right).
- 53.0 Fork. Geological Survey sign. Continue south and southwest, avoiding road to northwest (right) and another faint one farther south at mile 55.6. From this point to Wenden is fair to good plains road.
- 56.5 Fork. Geological Survey sign (wooden post). Continue south, avoiding road on right. Geological Survey sign.
- 56.9 Fork. Geological Survey sign (wooden post). Continue south on main road.
- 57.1 Railroad crossing. Geological Survey sign at crossroads on south side of railroad. Go east to Santa Fe, Prescott & Phoenix Railway station.
- 57.2 Wenden, Santa Fe, Prescott & Phoenix Railway station.

WENDEN TO TOLLADAYS WELL (9 MILES).

[See p. 291 for log in opposite direction.]

This log is for the use of travelers going to Phoenix by way of Cunningham Pass and Wenden. From Parker to Wenden use log on pages 294-295. From Tolladays Well to Phoenix use log on pages 295-296.

- 0.0 Wenden railroad station. Go west.
- 0.1 Crossroads. Geological Survey sign. Turn south.
- 0.3 Fork. Geological Survey sign. Turn to right. Road on left is poor road to Tolladays Well.
- 0.6 Fork. Geological Survey sign. Turn to right on main road.
- 1.6 Petes Well, water. Continue south.
- 4.9 Fork. Geological Survey sign. Turn to left. Road on right leads to Salome. Continue, passing Geological Survey signs at reverse forks at miles 7.3 and 9.2.
- 9.3 Tolladays Well, water.

SALOME TO PHOENIX BY WAY OF PALO VERDE AND BUCKEYE (104 MILES).

[See pp. 290-291 for log in opposite direction.]

- 0.0 Salome railroad station. Go southwest across railroad. The road all the way from Salome to Palo Verde mine is a fair to good plains road.
- 0.3 Crossroads. Geological Survey sign. Turn southeast (left) as indicated by sign. Road coming in on west along railroad leads from Parker (see p. 294); that along railroad on east leads to Wenden, Wickenburg, and Phoenix (see pp. 298-299), and that on south leads to Harquahala and Palomas (see pp. 307-308).
- 3.0 Fork. Geological Survey sign. Road coming in on left is from Wenden and is alternative route from Parker. Continue, passing Geological Survey signs at reverse forks at miles 5.4 and 7.3.
- 7.4 Tolladays Well, water, usually someone living here. Continue straight ahead.
- 7.7 Fork. Geological Survey sign. Continue straight ahead, avoiding road to right, which leads to cattle watering places in Harquahala Plain, used only by cattlemen.
- 11.3 Fork. Geological Survey sign. Road coming in on left is poor alternate road from Wenden. Continue straight ahead.
- 12.1 Fork. Geological Survey sign. Bear to right. Road on left goes to mine.
- 32.7 Burned Place Well. Geological Survey sign. Water, faucet is provided.
- 36.4 Big Horn Well. Geological Survey sign. Water but no facilities for obtaining it.

- 41.9 **Palo Verde mine.** Geological Survey sign. Water but no other supplies. Caretaker lives here. Continue straight ahead over fair to poor plains road.
- 48.2 Fork. Geological Survey sign. Continue on main road, avoiding road on right.
- 48.3 **Winters Wells.** Geological Survey sign. Water but no other supplies, cattle-man's camp.
- 51.2 Fork. Geological Survey sign. Road on right leads to Arlington and also joins with a road which rejoins the main road to Palo Verde at mile 59.3, forming alternate route. When the main road is in bad shape it is sometimes advisable to use this alternate. For 8 miles from this fork the main road is chunky, with high centers in dry weather and very muddy in wet weather.
- 59.3 Geological Survey sign. Road coming in on right is alternate mentioned above. Continue over rocky road around basalt hill. Avoid faint branch roads going north on north side of this hill.
- 60.5 Fork. Geological Survey sign. Turn east (left), avoiding road to south, which is Yuma road. (See p. 284.)
- 60.7 Ford Hassayampa River. Usually very little water in river.
- 63.4 Crossroads at **Palo Verde.** For log of road from Palo Verde to Phoenix see Yuma to Phoenix log (p. 289).

ROUTE BETWEEN PHOENIX AND WENDEN OR SALOME BY WAY OF WICKENBURG.

PHOENIX TO WICKENBURG (62 MILES).

[See pp. 298-299 for log in opposite direction.]

- 0.0 **Phoenix.** Santa Fe, Prescott & Phoenix Railway station. Go north on Central Avenue to Van Buren Street.
- 0.5 Turn west (left) on Van Buren Street to Five Points.
- 1.0 Five Points. Turn northwest (right) on Grand Avenue (electric-car track). Continue northwest.
- 2.3 State Fair Grounds on right. End of electric-car track.
- 2.4 Railroad crossing and end of asphalt road. Cross railroad and then follow it.
- 3.8 Clarks station.
- 4.8 Alhambra station.
- 6.5 Kane siding.
- 8.7 Fair Hope Farm. Macadam road ends.
- 9.3 **Glendale station.** Water, gasoline, and supplies. Continue northwest along railroad, through town, avoiding roads crossing main one at miles 9.8, 10.2, and 10.8.
- 12.2 Railroad crossing. Cross railroad and canal and continue northwest along railroad.
- 13.6 **Peoria, water, gasoline, and supplies.** Continue northwest, passing Goodrich sign at crossroad just beyond station.
- 14.9 Crossroads.
- 15.4 New River. Cross on concrete dip.
- 15.6 Avoid branch road on right.
- 16.5 Crossroads. Transformer house. Marinette station.
- 16.8 Fork. Goodrich sign. Continue straight ahead, avoiding road on right.
- 17.6 Fork. Continue straight ahead, avoiding road on left.
- 18.0 Agua Fria River. Cross river, poor ford, quicksand in flood time. Continue northwest along railroad.
- 18.4 Fork at railroad water tank. Continue straight ahead, avoiding road on left.
- 19.7 Crossroads.
- 20.0 Ennis station.

- 20. 1 Continue straight ahead, avoiding road on left.
- 21. 8 Avoid road on left. Continue along railroad.
- 24. 3 **Beardsley** siding. Section house. Road forks just beyond station. Continue straight ahead, avoiding road on left.
- 27. 3 Hoover. Ranch buildings, abandoned well, no water. Continue along railroad.
- 33. 4 New graded road starts.
- 35. 9 Nada siding. Continue along railroad.
- 43. 3 Cross railroad to **Hot Springs Junction**. Water for sale from railroad tank; also supplies and hotel. Continue northeast, leaving railroad and avoiding road on left, which leads to Wickenburg along railroad but is a poor road.
- 45. 4 Avoid old road forking off on left.
- 46. 1 Fork. Take left-hand road, avoiding road on right, which leads to Castle Hot Springs, 21.5 miles from this point.
- 46. 8 Old road comes in on right.
- 49. 9 Fork at **Santo Domingo Wash**. Water in sand approximately 300 yards downstream from road at all seasons. Runs on surface in rainy season. Take right-hand road.
- 50. 2 Fork. Road on right goes to **Tub Springs**, 1.2 miles from this point, and rejoins road 0.8 mile farther on. Water in sand of Tub Springs Wash above and below road at all seasons, runs on surface in rainy season. Take left fork.
- 51. 8 Road coming in on right leads to Tub Springs, 0.8-mile away. Continue northward on main road.
- 55. 1 Road coming in on right leads to mining camps. Continue straight ahead.
- 57. 1 Fork. Turn southwest (left).
- 61. 5 Cross bridge over Hassayampa River and continue to Wickenburg.
- 61. 8 **Wickenburg** post office. Water and supplies.

WICKENBURG TO WENDEN AND SALOME (58 MILES).

[See p. 298 for log in opposite direction.]

Most of this portion of the Parker cut-off was not traveled during the present investigation. The logs southwest and northeast are in large part adapted from that given in Arizona Good Roads Association Illustrated Road Maps and Tour Book, by Harry Locke, 1913.

- 0. 0 **Wickenburg** post office. Go west along railroad.
- 0. 1 Railroad crossing. Turn right across railroad.
- 0. 3 Fork. Keep straight ahead, avoiding road on left.
- 0. 6 House and windmill.
- 1. 5 Another road from Wickenburg comes in on right. Continue straight ahead.
- 2. 0 Fork. Tin sign. Road to left leads to Vulture mine, which is 11.7 miles from this point. Take right fork. Pass through northern part of Vulture Mountains.
- 10. 3 Fork. Take left fork.
- 17. 9 Road reaches railroad and continues along it.
- 21. 2 Forepaugh. Continue along railroad, avoiding crossroads and forks leading off.
- 27. 3 Road passes windmill.
- 29. 1 **Agulla**. Railroad water supply. Continue along south side of railroad, avoiding crossroads and forks leading off.
- 52. 6 **Wenden**. Water, gasoline, supplies, post office, and hotels. Road south from Wenden leads to Tolladays Well, Palo Verde, and Phoenix. (See pp. 295-296.) Road north leads to Parker through Cunningham Pass (see pp. 292-293), also to Alamo. Geological Survey sign at crossroads. Continue along south side of railroad over new graded county road.

- 58.0 Railroad crossing. Geological Survey sign. Turn right across railroad for **Salome** depot (mile 58.3), or continue along south side of railroad for Vicksburg and Parker. (See pp. 291-292.) Salome has water, gasoline, supplies, post office, and hotel. Road south from Salome leads to Harquahala and Palomas. (See pp. 307-308.) Road southeast leads to Tolladays Well, Palo Verde, and Phoenix. (See pp. 295-296.)

SALOME AND WENDEN TO WICKENBURG (58 MILES).

[See pp. 297-298 for log in opposite direction.]

- 0.0 **Salome** depot. Go west to railroad crossing and cross to south side.
- 0.3 Crossroads on south side of railroad. Geological Survey sign. Turn to left and continue on new graded county road along railroad.
- 5.7 **Wenden**. Geological Survey sign. **Water**, gasoline, supplies, post office, and hotels. Road south from Wenden leads to Tolladays Well, Palo Verde, and Phoenix. (See pp. 295-296.) Road north leads to Parker through Cunningham Pass (see pp. 292-293), also to Alamo. Geological Survey sign at crossroads. Continue along south side of railroad, avoiding crossroads and forks leading off.
- 29.2 **Agulla. Railroad water supply**. Continue along railroad, avoiding crossroads and forks leading off.
- 31.0 Road passes a windmill.
- 37.1 Forepaugh. Continue along railroad.
- 40.4 Turn southeast (right) away from railroad.
- 48.0 Road comes in on left. Continue southeast and later east, passing through northern part of the Vulture Mountains.
- 56.3 Tin sign. Road coming in on right leads to Vulture mine, which is 11.7 miles from this point. Continue northeast.
- 56.8 Fork. Both roads go to Wickenburg. Take right-hand road.
- 57.7 Road passes house and windmill.
- 58.0 Fork. Keep straight ahead, avoiding road on right.
- 58.2 Railroad crossing. Cross to east side.
- 58.3 **Wickenburg** post office. **Water** and other supplies.

WICKENBURG TO PHOENIX (62 MILES).

[See pp. 296-297 for log in opposite direction.]

- 0.0 **Wickenburg** post office. Go east across Hassayampa River bridge (0.3 mile), then north.
- 4.7 Fork. Goodrich sign. Turn east, avoiding road to north (left) on good mountain road.
- 6.7 Fork. Goodrich and two other signs. Take right-hand road, avoiding road on left to mining camps.
- 10.0 Fork. Road to left (wooden sign) goes to Tub Springs (0.8 mile), then rejoins main road 1.2 miles farther east. **Water in sand of Tub Springs Wash** at all seasons; runs on surface in rainy season. Continue on right fork (main road).
- 11.6 Fork. Road forking back on left goes to Tub Springs (1.2 miles), then rejoins main road 0.8 mile farther west. Continue straight ahead.
- 11.9 **Santo Domingo Wash**. Goodrich sign. Water in sand approximately 300 yards downstream from road at all seasons. Runs on surface in rainy season. Continue, avoiding old road on left (mile 15.0).
- 15.7 Fork. Turn south, avoiding road on north (left) to Castle Hot Springs (mile 21.5). Continue south to Santa Fe, Prescott & Phoenix Railway crossing at Hot Springs Junction (Goodrich sign), avoiding old road on right (mile 16.4)

and road on left a short distance north of railroad. **Hot Springs Junction** is town of 14 houses, water for sale from railroad tank, supplies, hotel. Cross railroad and turn southeast (left) along railroad on graded road.

- 25. 9 Pass Nada siding and continue. New graded road ceases at mile 28.4.
- 34. 5 Pass Hoover, ranch buildings, abandoned well, no water, and continue.
- 37. 5 Fork. Goodrich sign. Continue straight ahead, avoiding road on right and passing **Beardsley** siding, section house, just beyond fork, and a road to right (mile 40.0).
- 41. 7 Fork. Goodrich sign. Continue straight ahead, avoiding road on right, passing **Ennie** siding (mile 41.8), and crossing road (mile 42.1).
- 43. 4 Fork at water tank, wooden sign. Continue straight ahead, avoiding road on right.
- 43. 8 Cross Agua Fria River, poor ford, quicksand in flood time. Continue southeast along railroad.
- 44. 2 Fork. Continue straight ahead, avoiding road on right.
- 45. 0 Fork. Goodrich sign. Continue straight ahead, avoiding road on left, cross road at transformer house, **Marinette station** (mile 45.3), cross New River on concrete dip (mile 46.4), cross another road (mile 46.9), and another one. Goodrich sign, just before reaching Peoria station.
- 48. 2 Pass **Peoria station**. Water, gasoline, and supplies in town. Continue to railroad crossing. Sign on each side of railroad.
- 49. 6 Cross canal and railroad and continue southeast along railroad, crossing roads at miles 51.0, 51.6, and 52.0, passing through town of **Glendale**. Water, gasoline, supplies, and hotels in town.
- 52. 5 Pass Glendale station and continue past Fair Hope Farm. Macadam road starts here (mile 53.1). Pass Kane siding (mile 55.3), Alhambra station (mile 67.0), cross railroad, follow asphalt street (Grand Avenue) (mile 59.4), pass State Fair Grounds, and follow electric-car track (mile 59.5) to Five Points.
- 60. 8 Turn east at Five Points on Van Buren Street to Central Avenue.
- 61. 3 Turn south on Central Avenue.
- 61. 8 **Phoenix**. Santa Fe, Prescott & Phoenix Railway station.

BOUSE-SWANSEA ROUTE.

The road from Bouse to Swansea runs northward along the **Arizona & Swansea Railroad**. At 12 miles from Bouse it crosses the Wenden-Parker road and continues along the railroad 10 miles to Swansea, a mining town which operates the only smelter in this section of the country. The first 12 miles from Bouse is a good desert road that keeps close to the railroad and crosses it four times. At 12 miles north of Bouse the road enters the mountains. The last 10 miles to Swansea was not traveled during the present survey. The road is reported to be a good mountain road. At Midway there is a water tank which is usually kept filled by the railroad company.

VICKSBURG-QUARTZSITE ROUTE.

VICKSBURG TO QUARTZSITE (30 MILES).

[See p. 300 for log in opposite direction.]

- 0. 0 **Vicksburg depot**. Geological Survey sign. Go south and southwest over good plains road.
- 4. 9 **Desert Well**. Water. Geological Survey sign short distance west of well. Bear to right, avoiding roads leading off to left, some of them to Twentymile Well, which is several miles southwest of this point and has emergency water supply. Cross adobe flat, which is miry in wet weather.

- 10.9 Geological Survey sign. Road coming in on left goes to Twentymile Well. Continue westward among hills and through valley, then ascend Plomosa Mountains over steep and very rough road.
- 19.7 Guadalupe mine, near summit. Abandoned; no water or other supplies. Descend mountains over a fair mountain road to the plain and continue westward.
- 24.4 Geological Survey sign. Road coming in on north (right) leads to Bouse. Continue straight ahead.
- 24.9 Geological Survey sign. Road coming in on south leads to Plomosa mine. Continue straight ahead over good desert road.
- 29.8 **Tysons Well. Water.** Continue straight ahead to Quartzsite.
- 30.0 **Quartzsite** post office. Water. From this place roads lead west to Ehrenberg and south to Dome and Yuma.

QUARTZSITE TO VICKSBURG (30 MILES).

[See pp. 299-300 for log in opposite direction.]

- 0.0 **Quartzsite.** Go east, passing Geological Survey sign near post office. Take left fork a short distance past this sign to Tysons Well. Geological Survey sign.
- 0.2 Continue to fork. Geological Survey sign. Good plains road to mountains.
- 5.1 Fork. Continue straight ahead, avoiding road on south (right) to fork. Geological Survey sign.
- 5.6 Continue straight ahead, avoiding road on north (left). Ascend Plomosa Mountains, fair mountain road, passing Guadalupe mine (abandoned; no water supplies) near summit.
- 10.3 Descend mountains, very rough mountain road, cross inclosed valley, and pass through hills to fork. Geological Survey sign. Road east (right) at fork goes to Twentymile Well (2.6 miles), where water could be obtained in an emergency. A road runs from Twentymile Well to Desert Well (4 miles), but it has high centers and chuck holes. Automobilists should use caution if they travel over it.
- 19.1 Fork. Geological Survey sign. Continue, passing **Desert Well** (mile 25.1). Water. Geological Survey sign. Road as far as Desert Well over adobe flats; look out for high centers, bad in wet weather. Road from Desert Well to Vicksburg is good plains road.
- 30.0 **Vicksburg.** Southern Pacific Railroad station and post office. Geological Survey sign. Road west to Parker, east to Wickenburg and Phoenix.

BOUSE-QUARTZITE ROUTE.

BOUSE TO QUARTZSITE (24 MILES).

[See p. 301 for log in opposite direction.]

- 0.0 **Bouse** railroad station. Cross railroad and go south, passing Geological Survey sign at corner of street.
- 0.2 Fork at which there is another Geological Survey sign. Road on right goes to Parker. Take road on left (west of south). The road from Bouse to Plomosa Mountains, 10 miles distant, is a good plains road, except for short stretch of silt just out of Bouse.
- 0.9 Fork. Geological Survey sign. Road on left goes to a mining camp, 10 miles away. Take road on right.
- 1.7 Road coming in on right is an alternate road from Bouse. Continue ahead.
- 7.2 Fork. Geological Survey sign. Road on left goes to Daly mines. Take right-hand road.

- 8.7 Fork. Geological Survey sign. Take left-hand road to Plomosa Mountains and across them.
- 12.4 Fork on west side of mountains. Geological Survey sign. Road on left goes to Plomosa mine. Take right-hand road. The road from this fork to Quartzsite is a good plains road.
- 23.8 Forks on outskirts of Quartzsite. Bear to right, avoiding road on left. Continue on main street to post office.
- 24.2 Quartzsite post office. Water, groceries, and hotel, but no automobile supplies. From the post office roads lead east to Vicksburg (see p. 300); west to Ehrenberg, Blythe, and Los Angeles (see pp. 301-302); south to Dome and Yuma (see pp. 303-305); and southeast to New Water Pass.

QUARTZSITE TO BOUSE (24 MILES).

[See pp. 300-301 for log in opposite direction.]

- 0.0 Quartzsite. Post office, water, groceries, hotel. No automobile supplies in town. Continue past post office on main street to fork at outskirts of Quartzsite. Road for 12 miles from this fork is good plains road.
- 0.4 Fork. Go to left, avoiding road on right.
- 11.8 Fork. Geological Survey sign. Continue straight ahead through Plomosa Mountains on good mountain road. Road coming in on right is from Plomosa mine.
- 15.5 Continue straight ahead. Road from the Plomosa Mountains to Bouse is good desert road except for a short stretch of silt just south of Bouse.
- 17.0 Fork. Geological Survey sign. Take right-hand road. Road coming in on left is from Daly mines.
- 22.5 Fork. Go straight ahead, avoiding road on left, which is alternate to Bouse.
- 23.3 Fork. Geological Survey sign. Take road on left. Road on right goes to a mining camp (10 miles).
- 24.0 Fork. Geological Survey sign. Take road on right. Road on left goes to Parker. (See log, p. 292.) Go north, passing Geological Survey sign at corner of street. Cross railroad to station. If bound east, turn east at sign.
- 24.2 Santa Fe, Prescott & Phoenix Railway station at Bouse. Road northwest through town leads to Swansea.

QUARTZSITE-EHRENBERG ROUTE.

QUARTZSITE TO EHRENBERG (19 MILES).

[See p. 302 for log in opposite direction.]

- 0.0 Quartzsite post office. Road for 12 miles from Quartzsite is fairly good but rough mountain road. From the post office go west, then southwest around a hill.
- 2.6 Fork. Geological Survey sign. Left fork goes to some mining camps. Follow right fork and continue west.
- 3.6 Fork. Geological Survey sign. Right fork goes to Keiser camp, 1 mile distant. Follow left fork and continue over winding road through Dome Rock Mountains.
- 9.1 Gonzales Wells. Water of fair quality. Continue along canyon.
- 10.2 Avoid road on right.
- 11.4 Fork. Avoid tracks on right, down the wash, which go to La Paz gold mine. Take road on left, emerging from mountains. There is good plains road for 5 miles after leaving the mountains. Road then descends to Colorado River flood plain and turns southwest.

- 12. 6 Geological Survey sign. Avoid road coming in on right. Continue straight ahead.
- 16. 6 Geological Survey sign. Road coming in on right goes to La Paz and to Parker, 43 miles distant. Continue over sandy river-bottom road southwestward to Ehrenberg Ferry.
- 18. 8 **Ehrenberg Ferry.** Wooden shack, no supplies. Wooden ferry boat with cable across Colorado River; current furnishes motive power. Charges are \$3 per automobile, \$2 per wagon, and 25 cents per foot passenger (1917). The California side of the river is flooded at high water, caused by melting snow, and hence the ferry is usually not operated during the later part of May and during June, July, and a part of August. No well, but river water can be used if necessary.

EHRENBERG TO QUARTZSITE (19 MILES).

[See pp. 301-302 for log in opposite direction.]

- 0. 0 **Ehrenberg Ferry.** Wooden shack, no supplies. Wooden ferry boat with cable across Colorado River; current furnishes motive power. Charges are \$3 per automobile, \$2 per wagon, and 25 cents per foot passenger (1917). The California side of the river here is flooded at high water, caused by melting snows, so that ferry is usually out of commission during the later part of May and during June, July, and part of August. Continue on sandy river-bottom road.
- 2. 2 Fork. Geological Survey sign. Turn north (right), avoiding road forking at left (which goes to **La Paz and Parker**, 43 miles along Colorado River).
- 6. 2 Fork. Geological Survey sign. Avoid road forking to left. Continue east.
- 7. 4 Fork. Geological Survey sign. Take road on right, avoiding tracks leading back to left down wash, which go to La Paz gold mine. Continue, entering Dome Rock Mountains. Road from this point to Quartzsite is fairly good but rough mountain road.
- 8. 6 Fork. Continue, avoiding road on left along canyon.
- 9. 7 **Gonzales Wells.** Water of fair quality is obtainable. Continue on winding road through Dome Rock Mountains.
- 15. 2 Fork. Geological Survey sign. Take right fork. Road forking back goes to Keiser camp (1 mile).
- 16. 2 Fork. Geological Survey sign. Take left fork. Right fork goes to some mining camps. Go northeast, then east.
- 18. 8 **Quartzsite** post office.

EHRENBERG-PARKER ROUTE.

A poor but passable road lies between Ehrenberg and Parker. From Ehrenberg it is the same as the road to Quartzsite for 2.2 miles, where a fork with Geological Survey sign is reached. At this fork take left-hand road, leading northward along edge of valley, past the abandoned town of La Paz. In December, 1917, the La Paz Gold Mining Co. started to drill wells a short distance east of La Paz.

Between La Paz and Parker there are several possible roads along the river. Water can be obtained from the river or from sloughs. Generally the water from these sloughs is fit for stock and can be used by man if it is boiled. Shallow wells on the Indian reservation yield salty water, none of which is probably drinkable.

QUARTZSITE-DOME ROUTE.

QUARTZSITE TO DOME BY MAIN ROAD (73 MILES).

[See pp. 305-306 for log in opposite direction.]

Only the new county road across La Posa Plain has been marked by the United States Geological Survey. The log of this road is given here. For log of old road see pages 304-305. This new road is much better for a stranger to follow because of the numerous confusing forks along the old one. The latter is considered better by many local people because, having been more traveled, it is harder.

- 0.0 **Quartzsite** post office. Go east to Geological Survey sign, then turn south, as indicated on sign, and continue to crossroads.
- 0.9 **Crossroads.** Geological Survey sign. Road on left (southeast) goes to New Water Pass, where there is a water supply. Road coming in on left (north-east) is from Tysons Well, on outskirts of Quartzsite. For Dome bear to the right. Fair to good plains road for 30 miles from this point to Castle Dome Mountains.
- 2.9 **Fork.** Geological Survey sign: Road on right is the old road. (See pp. 304-305.) Take left fork.
- 13.6 **Crossroads.** Geological Survey sign. The crossroad comes from the old road and **Sand Tanks** (about 1.5 miles northwest) on the right and leads eastward to New Water Pass. **Water** may be obtained at Sand Tanks by digging in a wash. Continue straight ahead. About 2 miles beyond this point the old road comes in on right.
- 26.2 **Fork.** Geological Survey sign. Avoid faint road forking back to right, and also a similar road just before reaching the sign. These roads go past the so-called Clark well, an abandoned dry hole at the side of the valley, and thence lead to Cibola on the Colorado. Road to Dome continues southward. The old road (winding) and the new road (straight) are close together and cross each other in several places. Follow the most traveled road.
- 28.7 **Turn southeast (left) and enter pass in Castle Dome Mountains.** Go through pass on good mountain road and emerge into small valley hemmed in by mountains.
- 30.9 **Turn to right on leaving the pass.**
- 32.0 **Fork.** Geological Survey sign. **Right fork** is a fairly good road to **Horse Tanks**, 1.8 miles from this point. These are a series of natural rock tanks extending up a canyon. Not difficult to find. Water for stock or automobile always obtainable, and usually some of the tanks have water clean enough for human consumption. Travelers desiring to go to tanks turn off at mile 32.0 and rejoin main route at 32.5. (See Pl. XX.) **Left fork** is main road. Continue on main road unless water is needed.
- 32.5 **Fork.** Geological Survey sign. Road on right leads to Horse Tanks, 2 miles from this point. Continue straight ahead.
- 32.6 **Fork.** Geological Survey sign. Avoid fork on left, which is old road to Deep Well. Continue on right-hand road. It passes out of the small valley through a pass in low hills and then turns to the right and skirts the mountains. It is a good plains road.
- 39.4 **Fork.** Geological Survey sign. Avoid road coming in on left, which leads to Deep Well and Palomas. The road to Dome enters the Castle Dome Mountains and is in them for the next 4.7 miles. This part of the road is rough and has steep grades but is entirely passable for automobiles in good condition.
- 41.5 **Geological Survey sign** which indicates direction to **McPherson Tanks**. These are natural rock tanks, 1.5 miles up a canyon from the road. Water obtainable at all seasons, usually clean and good. It would be possible to drive a wagon up the wash near to these tanks, but an automobile could not

- get far from the main road. Continue on main road, steep down grades, to border of mountains. Then follow along edge of mountains to Geological Survey sign.
44. 1 Geological Survey sign indicating direction to **Ladder Tanks**. These are natural rock tanks half a mile up a canyon from the road. Water obtainable at all seasons, usually clean and good. It would be possible to drive a wagon up the wash nearly to these tanks, but an automobile could not get far from the main road. Main road continues southward near edge of mountains.
47. 9 **Castle Dome**. Old mining camp, usually someone living here. Water but no other supplies. Water can usually be obtained from tank at mine shaft or from pipe at houses, if this is in repair. Continue, passing schoolhouse. Several Goodrich signs at points where mine roads branch off show main road. Road from Castle Dome to Gila River (23.2 miles) is excellent desert road.
48. 9 Fork. Geological Survey sign. Take right fork. Road on left goes to mining camp.
49. 6 Geological Survey sign. A branch road on the left leads back to same camp. Continue on main traveled road southwestward, away from the mountains, avoiding faint roads that branch off. There are Goodrich signs at some of these forks.
67. 2 Fork. Geological Survey sign. Road coming in on left goes to Thumb Butte mine, 15.2 miles distant, and points beyond. It was at one time an alternate route to Phoenix but is now not used. Water is obtainable in prospect holes at Thumb Butte mine. Road to Dome continues southward.
68. 4 Fork. Either road leads to Dome. Left one avoids steep pitch coming out of wash and is therefore somewhat preferable. Mileage given is on left-hand road. The other is 0.3 mile shorter.
69. 7 Alternative road comes in on right.
71. 2 Point where road descends from terrace to flood plains of Gila River. Old buildings, corrals, and a well containing water that is undrinkable, with windmill that is out of order. From this point cross river flood plain to Dome, on the south bank. There are several roads. Take the most traveled one. This crossing is sandy but usually not very difficult except when river is high. At such times a Mexican is usually at hand to push cars across the stream on a flat boat. When the river is actually in flood this crossing is impassable.
73. 3 **Dome** post office. Water, gasoline, oil, supplies, hotel, and railroad station. The water is somewhat salty but drinkable. Road west leads to Yuma (p. 286). Road east leads to Phoenix (pp. 287-289).

QUARTZSITE TO DOME BY OLD ROAD ACROSS LA POSA PLAIN (73 MILES).

[See p. 307 for log in opposite direction.]

Many local people prefer this road to the new county road, because they are more used to it and also because the old road, having been more traveled, is harder. The distance is practically the same. The numerous roads branching off the old road make it rather easy for a stranger to lose his way. No signposts have been erected by the Geological Survey. Strangers are recommended to use the new road.

0. 0 **Quartzsite** post office. Go east to Geological Survey sign, then turn south as indicated on sign and continue to crossroads.
0. 9 Crossroads. Geological Survey sign. Road on left (southeast) goes to New Water Pass, where there is a water supply. Road coming in on left (northeast) is from Tysons Well, on outskirts of Quartzsite. For Dome bear to the right.
2. 9 Fork. Geological Survey sign. Road on left is new road: Road on right is old one. Take road on right.

- 3.6 Fork. Take left-hand road.
- 3.9 Abandoned well. No facilities, but **water** could be obtained with a rope **in emergency**. Depth to water is 36 feet. Continue southward.
- 5.5 Fork. Road on right goes to **Kuhn's windmill**, 0.6 mile distant. Water usually obtainable when windmill is pumping. Was sucking air when visited in November, 1917. There is a wash which may be difficult to cross just before reaching windmill. To continue on old road to Dome take left fork at mile 5.5.
- 11.4 Fork. Road on left joins the new road from Quartzsite to Dome. It has several branches, all leading in the same general direction. The distance from this fork to the Geological Survey sign, at the crossroads at mile 13.6 on the new road (see p. 303), is a little over 2 miles. Travelers bound for Dome should use main log of Quartzsite-Dome road from this sign, or, if it should be missed, from the next sign, which is at mile 26.2. Road on right at the forks on the old road at mile 11.4 is the road to Cibola. It continues to a big wash, 0.8 mile farther on, where water is obtainable by digging a foot or two in the sand of the wash. This place is known as **Sand Tanks**. It is possible to reach the Quartzsite-Dome road from the Sand Tanks by striking off to the east (left) across the desert, following old roads in part but picking one's own way for most of the distance over the desert surface, which makes a good road. Distance is 1.8 miles. If one takes this course he will strike the main Quartzsite-Dome road about a quarter of a mile south of the Geological Survey sign at mile 13.6. If bound for Dome turn to the right on the main road and continue southward, using log of Quartzsite-Dome road. (See p. 303.) Just beyond the wash where the water is available (Sand Tanks) the road forks. The left-hand road goes to Cibola, and the right is an abandoned road to Ehrenberg.

DOME TO QUARTZSITE BY MAIN ROAD (73 MILES).

[See pp. 303-304 for log in opposite direction.]

- 0.0 Dome post office. Water, gasoline, oil, supplies (including feed for horses), hotel, and Southern Pacific Railroad station. Cross the Gila River flood plain on one of the several roads. Take the most traveled one. This crossing is sandy but usually not very difficult except when river is high. At such times a Mexican is at hand to push cars across the stream on a flatboat. When the river is actually in flood this crossing is impassable. This road reaches a point on the northern bank of the flood plain of Gila River where there are old buildings, corrals, and a well with windmill. Windmill is out of order, and water in well is undrinkable.
- 2.1 At windmill ascend terrace and continue north.
- 3.6 At fork the road to left is left-hand road to next fork. Either road leads to Quartzsite. Right one avoids a steep pitch into a wash and is therefore somewhat preferable, especially going south. Mileage given is on righthand road. The other is three-tenths of a mile shorter.
- 4.9 At fork the road coming in on left is left-hand road from last fork.
- 6.1 Fork. Geological Survey sign. Avoid road forking to right. This goes to Thumb Butte mine (15.2 miles) and beyond. It was at one time an alternate route to Phoenix but is not now used. **Water** is obtainable in prospect holes at **Thumb Butte mine**. Continue on main traveled road, avoiding faint roads branching off. There are Goodrich signs at some of these forks.
- 23.7 Fork. Geological Survey sign. Continue on left-hand road, avoiding road on right to mining camp.

24. 4 Fork. Geological Survey sign. Take road on left. Road on right goes to mining camp. Several Goodrich signs beyond fork at points where mine roads branch off show main road.
25. 4 **Castle Dome**, old mining camp, usually someone living here. Water but no other supplies obtainable. Water can usually be obtained from tank at mine shaft, or from pipe at houses, if this is in repair. Follow along edge of mountains.
29. 2 Geological Survey sign indicates direction to **Ladder Tanks**. These are natural rock tanks up a canyon half a mile off road. Water obtainable at all seasons, usually clean and good. It would be possible to drive a wagon up the wash near to these tanks, but an automobile could not get far off the main road. From this sign the road goes through Castle Dome Mountains for 4.7 miles. It is rough and has steep grades but is entirely passable for cars in good condition. Continue from border of mountains up steep grades.
31. 8 Geological Survey sign here indicates direction to **McPherson Tanks**. These are natural rock tanks up a canyon 1.5 miles off road. Water obtainable at all seasons, usually clean and good. It would be possible to drive a wagon up the wash near to these tanks, but an automobile could not get far off the main road. Continue straight ahead.
33. 9 Fork. Avoid road forking off on right, which goes to Deep Well (no water) and Palomas. From this point the road skirts the mountains (good plains road) and then enters inclosed valley through pass in low hills.
40. 7 Fork. Geological Survey sign. Avoid fork on right, which is old road to Deep Well.
40. 8 Fork. Geological Survey sign. Continue straight ahead. Road on left leads to **Horse Tanks** (2 miles). Northbound travelers use this to go to the tanks and the one farther west to rejoin the main road. Southbound travelers desiring to go to tanks turn off at mile 41.3 and go to tanks, and use this road to return to main road. Horse Tanks are a series of natural rock tanks extending up a canyon. No difficulty in finding them. Water for stock or automobile always obtainable. Usually some of the tanks have water clean enough for human consumption.
41. 3 Geological Survey sign. Road coming in on left is from Horse Tanks.
42. 4 Turn to left and go through pass on good mountain road to turn on west side of Castle Dome Mountains. Fair to good plains road for 30 miles from Castle Dome Mountains to Quartzsite.
44. 6 Turn north.
47. 1 Fork. Geological Survey sign. Avoid faint road forking on left, and also similar road after passing the sign. These go past abandoned dry well at side of valley to Cibola. Along this portion of route the old road (winding) and the new road (straight) are close together and cross each other in several places. Follow most traveled road.
59. 7 Crossroads. Geological Survey sign. Continue straight ahead. Road to left is old road to Quartzsite (see log, p. 307). Road on right leads to New Water Pass.
69. 7 Reverse fork. Geological Survey sign. Continue straight ahead. Road coming in on left is old road across La Posa Plain.
70. 4 Crossroads. Geological Survey sign. Road coming in on right is from New Water Pass. Road on northeast (right) leads to Tysons Well on the outskirts of Quartzsite. If bound for Vicksburg or Bouse, a small distance will be saved by using this road. Geological Survey sign at well. For Quartzsite bear to left.
73. 3 **Quartzsite** post office.

DOME TO QUARTZSITE BY OLD ROAD ACROSS LA POSA PLAIN (73 MILES).

[See pp. 304-305 for log in opposite direction.]

The old road across La Posa Plain is preferred to the new county road by some people but is not recommended to strangers. (See p. 304.) Several faint roads which lead to the old road fork to the northwest off the county road in the southern part of La Posa Plain. None is now very distinct. The most distinct at the time of visit was that at which a Geological Survey sign was erected, so the log will be given from this point. From Dome to these crossroads use log of main road (pp. 305-306.)

- 59.7 Crossroads on county road across La Posa Plain. Geological Survey sign. For old road turn to left.
- 61.7 Road comes in on left from Cibola. Continue north.
- 67.6 Fork. Road on right goes to **Kuhn's windmill** (0.6 mile). Water obtainable when windmill is pumping; was sucking air when visited in November, 1917. There is a wash which it may be difficult to cross on the windmill road just before reaching windmill. From fork continue north to abandoned well.
- 69.2 Well, abandoned. No facilities but could get water with a rope in emergency. Continue to reverse fork.
- 69.5 Continue north to reverse fork. Road coming in on right is new road across La Posa Plain from Dome.
- 70.2 From fork continue north to Quartzsite.
- 73.1 Quartzsite post office.

HARQUAHALA ROUTE.

SALOME TO PALOMAS BY WAY OF HARQUAHALA (65 MILES).

[See p. 308 for log in opposite direction.]

- 0.0 Salome depot (Santa Fe, Prescott & Phoenix Railway). Go west to railroad crossing.
- 0.3 Cross railroad. Take road going due south (straight ahead). Good desert road. Geological Survey sign here indicates the proper road. Continue past Mesquite Well (0.8 mile), avoiding faint branch roads. Good water at Mesquite Well when windmill is pumping. Pool is dirty.
- 4.2 Enter Little Harquahala Mountains. Follow main road to Harquahala mine office and post office, avoiding faint roads and trails leading off into mountains. Good mountain road, excellent when in repair.
- 9.0 Harquahala mine office and post office. Water but no supplies. Go past post office down valley, emerging from mountains at mile 10.3. It is not necessary to ascend hill to post office if not desired. Several roads lead through old town at base. Continue east of south across Harquahala Plain. Old road here too deeply worn in places to be used. Follow more recent tracks alongside of it or make new one. No difficulty is likely to be experienced in doing this.
- 20.4 Cross end of Eagle Tail Mountains through low pass. Cross valley to edge of hills.
- 28.9 Pass through gap in hills along wash. Road is in bed of wash for greater part of a mile; heavy going. Dead Man's Tank or Road Tank in this wash unreliable; dry when visited.
- 30.9 Emerge from hills and go southeast on good desert road to fork.
- 39.2 Turn south (right). Road on east (left) goes to **Clantons Well** (0.6 mile), water, and then continues to Arlington (little used). The faint road on northwest goes to a mining camp. Go through gap in hills. Continue south on good plains road.
- 62.6 Road to east (left) goes to Agua Caliente (mile 12.3) and Phoenix (mile 110.4). (See mile 88.1 of log on p. 287.) Continue straight ahead on fair to poor river-bottom road.

- 65.3 **Palomas.** Water. From Palomas a road leads southwest to Yuma and another south to Aztec on the Southern Pacific Railroad.

PALOMAS TO SALOME BY WAY OF HARQUAHALA (65 MILES).

[See pp. 307-308 for log in opposite direction.]

- 0.0 **Palomas** post office. Go north on main Phoenix-Yuma road. About a mile from post office avoid tracks leading east (right). There is a Geological Survey sign here. Continue north over a rather poor road.
- 2.7 Fork. Geological Survey sign. Go straight ahead. Road on right goes to Agua Caliente (12.3 miles) and Phoenix (110.4 miles) from this point. (See mile 88.1 of log on p. 287.) Take road straight ahead for Harquahala and Salome. Good plains road.
- 25.0 Pass through gap in hills.
- 26.1 Fork. Geological Survey sign. Road on right across wash goes to **Clantons Well**, half a mile distant. Water. Thence the road continues to Arlington, but it is little used. Road nearly straight ahead goes to mining camp. To continue to Harquahala take left-hand road. It is a good plains road but is faint in some places.
- 34.4 Gap in hills on right of steep-sided butte. Pass through gap along wash. Road is in bed of wash for nearly a mile and is somewhat difficult for automobiles. Dead Mans Tank, or Road Tank, is in this wash but is unreliable as a watering place. Continue on good plains road toward west end of Eagle Tail Mountains.
- 44.9 Low pass across end of Eagle Tail Mountains. Go through the gap, then straight across the desert toward the Little Harquahala Mountains. The road here is too deeply worn in places to be used. Follow more recent tracks along side of it or make new tracks. The desert surface makes good natural road.
- 55.0 Enter Little Harquahala Mountains along wash.
- 56.3 **Harquahala** mine office, post office, and water, but no other supplies. It is possible to continue to Salome without going quite to post office. From the post office go north downhill and continue down the valley. The road from Harquahala to Salome is good; excellent when in repair.
- 61.1 Road leaves mountains.
- 64.5 **Mesquite Well.** If windmill is pumping good water is available; that in pond is dirty. Avoid faint branch roads and trails which lead off the main road at several points.
- 65.0 Railroad crossing. Geological Survey sign. Cross the railroad.
- 65.3 **Salome** depot. Water, gasoline, supplies, hotel, and post office.

ROUTES TO ALAMO SPRING.

It is probably not possible to reach Alamo Spring by automobile, but several roads extend close to it. The old road, still in fairly good condition, through Middle Well and Deep Well to Kofa can be easily traveled by automobile. From Kofa there are trails across the S. H. Mountains to Alamo Spring.

Another route is from Quartzsite through New Water Pass to Alamo Spring. Automobiles can reach New Water Pass where there is a water supply. Prospectors frequently make their headquarters here and travel east toward Alamo Spring with burros. Several trails are reported.

Cattlemen enter the Alamo Spring country from the east by taking the new road from Arlington through Gila Bend Mountains to a fork 20.1 miles from Arlington. Here they take the right-hand road to Clantons Well, a distance of roughly 20 miles. From Clantons Well they have made a road for about 28 miles farther to Hoodoo Wells. These wells are not very far from Alamo Spring.

Another possible route extends across Ranegras Plain from Vicksburg in a direction a little east of south. There is reported to be no well-defined road, but several trails lead in this general direction. No automobile is known to have gone the whole distance, roughly 30 miles, from Vicksburg to Alamo Spring, but certainly most of the trip could be made in a car and possibly all of it. With animals this route presents no difficulties except the lack of water.

INDEX TO WATERING PLACES.

An alphabetic list of all the watering places shown on the detailed maps (Pls. XX-XXII, in pocket) is given below. Most of the watering places, however, have been described in the road logs, and only the names of such places and the page on which the description appears are given in this list. Some watering places that are not on regularly traveled roads and are not mentioned in the logs are briefly described here. The plate numbers of the maps on which the watering places are shown are given. The data here given are as reliable as possible but must be used with discretion, as changes of various kinds may have occurred since the examination was made. The list includes a few watering places that are not shown on the maps because their exact location is not known.

Agua Caliente.—Pages 285, 288, 289; Plate XXI.

Agulla.—Pages 297, 298; Plate XXI.

Agulla Land & Water Co. wells.—This company has three wells in sec. 16, T. 7 N., R. 9 W.; sec. 15, T. 7 N., R. 10 W.; sec. 32, T. 8 N., R. 9 W. They are not convenient watering places for travelers but could doubtless be used if necessary. Plate —.

Alamo Spring.—A spring in a small, partly inclosed valley on the north side of S. H. Mountains, about 30 miles south of Vicksburg, Yuma County. Good water is reported to be obtainable from it at all seasons. Plate XXI.

Alhambra.—Pages 296, 299; Plate XXI.

Apiary Well.—Pages 286, 289; Plate XXI.

Arlington.—Pages 284, 286, 288; Plate XXII.

Avondale.—A station on the Buckeye line of the Arizona Eastern Railroad in sec. 19, T. 1 N., R. 1 W., Maricopa County. The store at the station has a well operated by means of a hand pump. The water is used for stock and for some domestic purposes but is said to be unfit for drinking. This is not a convenient watering place for travelers. (See Pl. XXII.)

Baragans Well.—Pages 285, 287; Plate XXI.

Big Horn Well.—Pages 290, 295; Plate XXI.

Bouse.—Pages 291, 293, 300, 301; Plate XXI.

Bradford Well.—One of Thomas W. Bales's cattle wells. It is about 9 miles south of Vicksburg and about the same distance southeast of Desert Well. It has a windmill but no facilities for travelers. It is not on any regularly traveled road.

Browns Well.—An irrigation well in the SW. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 23, T. 5 N., R. 13 W. There is reported to be a plentiful supply of water, which would doubtless be available for travelers if needed. Plate XXI.

Buckeye.—Pages 283, 289; Plate XXII.

Burned Place Well.—Pages 290, 295; Plate XXI.

Butler Well.—Pages 293, 294; Plate XXI.

Campbell Sheep Co. Well.—In sec. 13, T. 7 N., R. 9 W. This is not a convenient watering place for travelers but could doubtless be used if necessary. (See Pl. XXI.)

Cashion.—Pages 283, 289; Plate XXII.

Castle Dome.—Pages 304, 306; Plate XX.

Cement Well.—A cattle well belonging to the Flower Pot Cattle Co. in sec. 22, T. 2 N., R. 5 W. It has a windmill but no facilities for travelers. No one lives here. It is not on a regularly traveled road. (See Pl. XXII.)

Chain Tanks.—In a canyon on the east flank of Castle Dome Mountains, a short distance south of the road to Deep Well, is a series of natural rock tanks. These are reported to be large, and some of them are said to be reliable sources of water at all seasons. Tanks, called White Tanks, White Horse Tanks, and other names, have also been reported from this locality. It is not definitely known whether these are different sets of tanks or merely different names for the same one.

Cibola.—A small town in Yuma County, on Colorado River. It is most conveniently reached from the California side of the river, although a road from Cibola to Quartzsite connects here with roads to Bouse on the north and Dome on the south. Travelers can obtain water. (See Pl. XX.)

Cimetosa Tanks.—Natural tanks near Alamo Spring on the northern side of S. H. Mountains, nearly 30 miles from Vicksburg, Yuma County. Water can be obtained here during at least part of the year. (See Pl. XXI.)

Clantons Well.—Pages 307, 308; Plate XXI.

Coldwater.—Pages 283, 289; Plate XXII.

Courthouse Well.—A well on the Harquahala Plain, in sec. 16, T. 2 N., R. 10 W., used for watering stock by the Harquahala Livestock Co. No facilities are provided for travelers. It is not on any regularly traveled road. (See Pl. XXI.)

Coyote Well.—One of Thomas W. Bales's cattle wells. It is about 16 miles south of Vicksburg and 12 miles southeast of La Belle Well. (See Pl. XXI.) It has a windmill but no facilities for travelers. It is not on any regularly traveled road.

Crabb's Well.—A well belonging to D. D. Crabb, 10 miles southeast of Aguila. Water for travelers could doubtless be obtained if necessary. There is reported to be a shallow well with windmill 5 miles southeast of this well. It goes dry in summer. Plate XXI.

Cullins Well.—One of the long-established watering places in McMullen Valley, having been used as a stage station many years ago. It is about 10 miles east of Wenden, in sec. 38, T. 7 N., R. 11 W. (See Pl. XXI.) No recent data regarding it are at hand, but it is believed to be still available as a watering place.

Cunningham Pass watering places.—Plate XXI. A number of mines and prospects in Cunningham Pass are on the road between Wenden and Parker, in Yuma County. Water might be obtained from any of these in an emergency. The only reliable watering place close to the road is the well near one of the roads leading to the property of the Desert Mining & Development Co., 9 miles from Wenden. (See pp. 292, 295, and Pl. XXI.)

Dead Mans Tank (also called Road Tank).—Pages 307, 308; Plate XXI.

Deep Well.—A well on the old road from Palomas to Castle Dome and Dome, in Yuma County, 42 miles from Palomas. (See Pl. XXI.) It is now caved and abandoned.

Desert Well.—Pages 299, 300; Plate XXI.

Dixie mine.—Pages 284, 288; Plate XXII.

Dome.—Pages 286, 287, 304, 305; Plate XX.

Dos Palmas Well.—Commonly but incorrectly called Dos Palms Well. It is a cattle well belonging to the Flower Pot Cattle Co. in sec. 8, T. 4 N., R. 4 W. It has a windmill but no facilities for travelers. The supply of water is not abundant. No one lives here. It is not on a regularly traveled road. (See Pl. XXI.)

Ehrenberg Ferry.—Page 302; Plate XX.

Engel Well.—A well belonging to Zagel Engel, in the NE. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 10, T. 7 N., R. 8 W. Not completed in 1918, but water is probably now available. Plate XXI.

Farra's ranch.—Pages 285, 287; Plate XXI.

Fourth of July Tank.—Pages 284, 288; Plate XXI.

Freighters Well.—An abandoned well near Clantons Well. Plate XXI.

Galleta Well.—A cattle well belonging to the Flower Pot Cattle Co. in sec. 24, T. 1 S., R. 7 W. It has a windmill but no facilities for travelers. No one lives here. It is not on a regularly traveled road. (See Pl. XXII.)

Glendale.—Pages 296, 299; Plate XXII.

Gonzales Wells.—Pages 301, 302; Plate XX.

Goodman Tank.⁸—The best known and most accessible of the tanks in the Dome Rock Mountains. It is in the northern part of the range (see Pl. XX) but is not on any regularly traveled road. The water is piped several feet from the sand which fills the natural tank. There are other tanks in these mountains, some of which are reported to be near the road between Quartzsite and Ehrenberg, but no definite information was obtained in regard to them.

Hall Well.—An abandoned well about 5 miles northwest of Agua Caliente and 1½ miles off the main road. It was sunk about 1914 by Mr. Hall and is 151 feet deep; its depth to water is 98 feet (Sept. 10, 1917). The well is cased with stove-pipe casing 1 foot in diameter. There are no facilities for obtaining water. At the time of visit there was enough baling wire lying on the ground to lower a bottle down the well and obtain water. This water had much iron rust in it and had a peculiar taste. It is scarcely drinkable. (See Pl. XXI.)

Harquahala.—Pages 307, 308; Plate XXI.

Hoist Well.—A cattle well belonging to the Flower Pot Cattle Co., reported to be in sec. 28, T. 1 S., R. 6 W. (?) It has a windmill but no facilities for travelers. The supply of water is not abundant. No one lives here. It is not on a regularly traveled road.

Hoodoo Wells.—Two wells close together and of the same character. They are near Alamo Spring, on the north side of S. H. Mountains and about 28 miles by road west of Clantons Well. Like the latter they are used for watering stock by Messrs. Clanton and Smith. They are equipped with windmills and gasoline engines.

Horse Tanks.—Pages 303, 306; Plate XX.

Hot Springs Junction.—Pages 297, 299; Plate XXII.

Humming Bird Spring.—A spring in Big Horn Mountains near the mine of the same name, belonging to E. R. Cartwright and situated 17 miles by trail from Palo Verde mine. Some water is reported to be available at all seasons, but in very dry weather the amount is small and the quality poor. (See Pl. XXI.)

Huttman Well.—In sec. 13, T. 7 N., R. 9 W. Water would doubtless be available if needed. Plate XXI.

Huttman Well.—Belonging to Hugo Huttman, in the SW. ¼ SW. ¼ sec. 18, T. 7 N., R. 8 W. Water would doubtless be available if needed. Plate XXI.

Jansen Well.—Belonging to J. M. Jansen, in the SE. ¼ SE. ¼ sec. 15, T. 7 N., R. 9 W. Water could doubtless be obtained by travelers if needed. There is an abundant supply. Plate XXI.

La Belle Well.—One of Thomas W. Bales's cattle wells. It is near the southeast end of Bear Hills, about 3 miles south of Twenty-mile Well. (See Pl. XXI.) It has a windmill but no facilities for travelers. It is not on any regularly traveled road.

Ladder Tanks.—Pages 304, 306; Plate XX.

La Paz.—Page 302; Plate XX.

Lapham, Charles W., well of.—In sec. 15, T. 7 N., R. 10 W. Water could doubtless be obtained by travelers if needed. Not shown on map because the location with respect to the near-by well of the Aguila Land & Cattle Co. is not known. Plate XXI.

Lapham, Frank C., wells of.—Three wells are reported to be owned by Frank C. Lapham. Water could doubtless be obtained by travelers if needed. They are in the SE. ¼ NE. ¼ sec. 10, T. 7 N., R. 8 W.; the NW. ¼ NW. ¼ sec. 25, T. 7 N., R. 8 W.; and sec. 27, T. 7 N., R. 8 W. Plate XXI.

Lava Springs Well.—A cattle well belonging to the Flower Pot Cattle Co. in the southeast corner of the NW. ¼ NE. ¼ sec. 8, T. 1 S., R. 6 W. It has a windmill but

⁸Jones, E. L., jr. Gold deposits near Quartzsite, Ariz.: U. S. Geol. Survey Bull. 620, p. 46, 1916.

no facilities for travelers. After a long dry spell it is unreliable. No one lives here. It is not on a regularly traveled road. (See Pl. XXI.)

Liberty.—Pages 283, 289; Plate XXII.

Lone Mountain Well.—A well in Harquahala Plain in the SE. $\frac{1}{4}$ sec. 17, T. 3 N., R. 11 W. It is a cattle-watering place of the Harquahala Livestock Co., reached by a road from Tolladays Well. (See Pl. XXI.) The water is of good quality, but no facilities are provided for obtaining clean water for human consumption. Near Lone Mountain is a well drilled 465 feet to bedrock but dry, which is occasionally referred to as Lone Mountain Well.

Loudermilk Well.—See State Well; Plate XXII.

McClellan Well.—A cattle well belonging to the Flower Pot Cattle Co. in the SW. $\frac{1}{4}$ sec. 36, T. 1 N., R. 6 W. This well is not very reliable. No one lives here. It is not on a regularly traveled road. (See Pl. XXII.)

McIntyre Well.—This well is near the railroad 13 miles west of Aguila. Water for travelers can probably be had. Plate XXI.

McPherson Tanks.—Pages 303, 306; Plate XX.

McVay.—Pages 291, 293; Plate XXI.

Mesquite Well.—Pages 307, 308; Plate XXI.

Mexican Mine Tanks.—See Old Mexican Mine Tanks.

Meyers and Wetzel's Well.—A well 12 miles southeast of Aguila from which water for travelers could doubtless be obtained if needed. (See Pl. XXI.)

Middle Well (abandoned).—A well put down originally to supply water for the King of Arizona mine, near Kofa, in the S. H. Mountains. It is in Yuma County, on the old road from Palomas, by way of Castle Dome to Dome and Yuma. It is $28\frac{1}{2}$ miles from Palomas. When the mine closed down, Abel Figueroa bought the well to use as a watering place for stock. It is now reported to be caved beyond repair, and no water is obtainable here. Mr. Figueroa intends to drill a new well in a location nearer his ranch, which he considers more desirable. The new well is to be some distance east of the old one, and 6 or 7 miles from the present road. (See Pl. XXI.)

Midway.—Pages 293, 294, 299; Plate XXI.

Morris ranch.—Pages 284, 288; Plate XXI.

Muggins Tank.—A very large natural rock tank is reported in the central part of the Muggins Mountains. This tank is said to have such a large capacity as to be available as a reservoir for water for irrigation. It is not near any road, was not visited during the present investigation, and nothing definite is known regarding it.

New Water.—The pass between the south end of the Plomosa Mountains and the west end of the S. H. Mountains is known as New Water Pass. Water is reported to occur here and to be available at all seasons. Whether it is in springs or natural tanks is not definitely known. Prospectors frequently camp here. There is a road from Quartzsite to the pass, and a trail into the Alamo Spring country on the north side of the S. H. Mountains. (See Pl. XXI.)

New Well.—A cattle well belonging to the Flower Pot Cattle Co. in sec. 28, T. 1 S., R. 6 W. It has a horse-operated pump but no facilities for travelers. No one lives here. It is not on a regularly traveled road. (See Pl. XXII.)

Norton.—Pages 285, 287; Plate XXI.

Old Mexican Mine Tanks.—Natural rock tanks are reported 2 miles south and a little east of the Old Mexican mine, which is situated in the Big Horn Mountains, about 15 miles from Winters Wells. These tanks are reliable only during a part of the year.

Old Well.—A cattle well belonging to the Flower Pot Cattle Co. in sec. 19, T. 1 S., R. 7 W. It has a windmill but no facilities for travelers. It yields abundant water. No one lives here. It is not on a regularly traveled road. (See Pl. XXI.)

Onemile Well.—One of Thomas W. Bales's cattle wells in sec. 23, T. 7 N., R. 17 W. It has a windmill but no facilities for travelers. It is not on any regular traveled road. (See Pl. XXI.)

Osbornes Well.—Pages 293, 294; Plate XX.

Palomas.—Pages 285, 287. Plate XXI.

Palomas Mountains Tanks.—A number of natural rock tanks are reported in the Palomas Mountains, some of which are reliable at all seasons. The Land Office plat shows water holes in sec. 21, T. 4 S., R. 14 W. (See Pl. XXI.)

Palo Verde.—Pages 283, 289; Plate XXII.

Palo Verde mine.—Pages 290, 296; Plate XXII.

Parker.—Pages 292-294; Plate XX.

Peoria.—Pages 296-299; Plate XXII.

Peroxide Well.—A cattle well owned by the Flower Pot Cattle Co. in sec. 15, T. 1 N., R. 5 W. It has a windmill but no facilities for travelers. No one lives here. It is not on a regularly traveled road. (See Pl. XXII.)

Petes Well.—Pages 291, 295; Plate XXI.

Phoenix.—Pages 283, 289; Plate XXII.

Popper Well.—Six miles west of Palo Verde mine is a well owned jointly by the Harquahala Livestock Co. and Richard Popper and used for watering stock. The water is reported to be good, but the amount is inadequate and the well is to be drilled deeper. No facilities are provided for travelers. No one lives here. It is not on any regularly traveled road.

Quail Springs.—A watering place in Gila Bend Mountains, Maricopa County. Water is reported to be obtainable here during eight or nine months of the year. The ground is always moist. Its exact location is not known.

Quartzsite.—Pages 300-304, 306, 307; Plate XX.

Red Tanks Well.—A cattle well belonging to the Flower Pot Cattle Co. in sec. 34, T. 1 S., R. 6 W. It has a windmill but no facilities for travelers. The supply of water is not large at any season and is unreliable in dry seasons. No one lives here. It is not on a regularly traveled road. (See Pl. XXII.)

Red Water Well.—A cattle well belonging to the Flower Pot Cattle Co. on unsurveyed land probably in sec. 15, T. 1 S., R. 8 W. It has a windmill but no facilities for travelers. No one lives here. It is not on a regularly traveled road. (See Pl. XXI.)

Reed Cashin Land & Sheep Co.'s Well.—A well in sec. 7, T. 7 N., R. 11 W. Water for travelers could doubtless be obtained if needed. Plate XXI.

Renada ranch.—The home ranch of this cattle company is in Butler Valley, Yuma County, sec. 2, T. 8 N., R. 14 W. The well at this place furnishes a sufficient supply of good water for domestic use and for watering stock. (See Pl. XXI.)

Rogers Well.—A cattle well near the northeast end of Big Horn Mountains. It is reported to be reliable at all seasons. For its approximate location see Plate XXI.

Salome.—Pages 291, 294, 295, 298; Plate XXI.

Sand Tanks.—Pages 303, 305; Plate XX.

Santo Domingo Tank.—Pages 297, 298; Plate XXII.

Southwest Cotton Co. Wells.—This company is developing a large cotton ranch north of Avondale, Maricopa County, in Tps. 1 and 2 N., Rs. 1 and 2 W. It has 15 wells in these townships from which it intends to irrigate. None of these are watering places for travelers, but water could doubtless be obtained at any of them should the need arise. The locations of these wells are shown on Plate XXII.

Star Well.—This well, put down to supply water for the North Star mine, is half a mile north of Deep Well near S. H. Mountains, Yuma County. It is now out of repair and no water can be obtained from it. (See Pl. XXI.)

State Well.—Pages 284, 288; Plate XXI.

Stokes, Fred, well of.—A well 3 miles east and 6 miles south of Aguila. Water for travelers could doubtless be had if needed. Plate XXI.

Stokes, T. B., well of.—In sec. 32, T. 7 N., R. 8 W. Water for travelers could doubtless be obtained if needed. Plate XXI.

Surprise Well.—Pages 284, 288; Plate XXII.

Swansea.—Pages 293, 294, 299; Plate XXI.

Tennmile Well.—One of Thomas W. Bales's cattle wells 10 miles southeast of Bouse and about the same distance northwest of Desert Well. It has a windmill but no facilities for travelers. (See Pl. XXI.) It is not on any regularly traveled road.

Thumb Butte mine.—This mine is in the southern part of the Castle Dome Mountains in Yuma County. It is on a road which was formerly one of the routes between Yuma and Phoenix but which is now little used beyond this mine. The mine is 21 miles from Dome. When the mine was visited in October, 1917, no one was found, but there is usually a caretaker at the property. No work was then in progress. Water stood in the shaft at a depth of 228 feet. There is also water in several shallow prospect holes in the immediate vicinity. This water is much more accessible than that in the shaft. (See Pl. XXI.)

Thumb Butte Tank.—In a wash north of the road a quarter of a mile east of Thumb Butte mine water can be obtained by digging in the sand, except in very dry seasons. (See Pl. XX.)

Tolladays Well.—Pages 291, 295; Plate XXI.

Torrance's Well.—A well belonging to Clay Torrance in the SW. $\frac{1}{4}$ SW. $\frac{1}{4}$ sec. 12, T. 7 N., R. 8 W. Water could doubtless be had by travelers if needed. Pl. XXI.

Tub Springs.—Pages 297, 298; Plate XXII.

Tule Tank.—A natural tank in the Gila Bend Mountains in Maricopa County. Its exact location is not known. Water can be obtained here during 8 or 9 months of the year, and the ground is always moist.

Twentymile Well.—Pages 299, 300; Plate XXI.

Uster Well.—In the SW. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 21, T. 7 N., R. 9 W. Water could doubtless be obtained by travelers if needed. Plate XXI.

Van Hagen Well.—Pages 286, 290; Plate XXII.

Vicksburg.—Pages 291, 294, 299, 300; Plate XXI.

Vinegaron Well.—One of Thomas W. Bales's cattle wells. It is about 13 miles south of Harquahala and 6 miles west of the pass through which the Harquahala-Palomas road crosses the Eagle Tail Mountains. (See Pl. XXI.) It has a windmill but no facilities for travelers. No one lives here. It is not on any regularly traveled road.

Volcanic Well.—A cattle well belonging to the Flower Pot Cattle Co. It is on unsurveyed ground, probably in sec. 8, T. 1 S., R. 8 W. It has a windmill but no facilities for travelers. No one lives here. It is not on any regularly traveled road. (See Pl. XXI.)

Vulture mine.—An old and well-known mine 13.7 miles by road south of Wickenburg. It is not now being worked, but a caretaker lives at the property and water can usually be obtained. There is a drilled well here, said to be 2,000 feet deep, but it is not in use. (See Pl. XXII.)

Webb Well.—Pages 286, 290; Plate XXII.

Wellton.—Pages 285, 287; Plate XX.

Wenden.—Pages 291, 292, 295, 297, 298; Plate XXI.

White Tanks (Maricopa County).—A reliable series of rock tanks called White Tanks is reported in the northern part of the mountain range of the same name in Maricopa County, west of the Agua Fria River. Probably other rock tanks occur in this range also.

White Tanks (Yuma County).—A reliable series of rock tanks is reported in the Tank Mountains northwest of the Palomas Mountains in Yuma County and accessible by trail from Palomas. The same name is sometimes applied to a series of tanks in the Castle Dome Mountains, farther west. (See p. 310.)

Willow Spring.—A well, or possibly an improved spring, in the Eagle Tail Mountains about a mile south of Courthouse Rock on an old road now used only occasionally by a horseman. In November, 1917, the water level was reported to be 10 feet below the curbing, so that water could not be obtained without a rope. For approximate location see Plate XXI.

Willow Tanks.—Pages 284, 288; Plate XXI.

Winters Wells.—Pages 290, 296; Plate XXII.

Wood Well.—A well belonging to Herbert Wood, 8 miles north of Aguila, at a mountain seep. This well is not on a regularly traveled road, but water could doubtless be had if needed. Plate XXI.

Woodchopper Tank.—A natural rock tank in the north flank of Big Horn Mountains. Water is available here during most of the year. A short distance north of Woodchopper Tank is a very large natural tank used for watering sheep and said to be reliable at all seasons. For approximate locations see Plate XXI.

Woolsey Tank.—Pages 286, 290; Plate XXII.

Yellow Medicine Tank.—Pages 284, 288; Plate XXI.

Yellow Medicine Well.—Pages 284, 288; Plate XXI.

Yuma.—Pages 286, 287; Plate XX.



