

PRESENT AND PROJECTED STATE AND COUNTY (MUNICIPIO) HIGHWAYS

As has already been noted in the summary of the work of the National Highway Commission, many of the State governments, assisted by the municipal, county and private agencies, are cooperating with the National Commission in the building of various sections of the National Highways. Indeed, so great has been the interest aroused in the movement for better roads that many states have established local highway commissions and in addition to assisting the National Commission in the building of the National Highways, are undertaking the construction of extensive systems of local state highways.

Limitations of space do not permit even an outline summary of the highway programs of the individual states and territories. However, some idea of the progress being made in the various states may be obtained from an examination of Table No. 2 showing the 1931 highway budgets for the majority of the states and the two territories in the Republic. Certain states, such as Nuevo León, Durango, Puebla, Vera Cruz, and Mexico, for which figures were not available at the time when Table No. 2 was compiled, are known to be very actively engaged in building local highways and if the expenditures of these states were added to those noted in Table No. 2 the total would undoubtedly be raised to around 8,000,000 pesos.

In preparing this report an effort was made to obtain a detailed statement of the present status and future plans of highway development from each of the states and territories.

TABLE NO. 2

STATE AND TERRITORIAL ROAD BUDGETS
FOR 1931 1/

<u>States</u>	<u>Pesos</u>
Aguascalientes.....	50,000
Campeche	180,000
Coahuila	750,000
Colima	24,000
Chiapas	300,000
Chihuahua	250,000
Guanajuato.....	180,000
Hidalgo.....	240,000
Jalisco	600,000
Nayarit	25,000
Oaxaca	100,000
Queretaro	100,000
Sinaloa	100,000
Sonora	800,000
Tabasco	100,000
Tamaulipas	375,000
Tlaxcala	150,000
Zacatecas	150,000
 <u>Territories</u>	
Lower California:	
Distrito Norte	500,000
Distrito Sur	150,000.....
Quintana Roo	650,000
	60,000
Total	<u>5,184,000</u>

1/ Statistics supplied by the Ministry of Communications and public Works

The information obtained has been correlated and checked with other data in the files of the National Highway Commission and the Program Section of the Ministry of Communications, working in cooperation with the National Highway Commission has endeavored to present the whole story in graphic form. On Map No. 20, (see attached folder), accordingly, will be found, in so far as data is available at the present time, the actual highways now in existence and the plans for the future development of roads in each of the political areas of the Republic. This is the most complete map of this type which has been made and it should prove of unique value in helping to correlate the national and local highways systems.

EXTENT AND USE OF MEXICAN HIGHWAYS

Comparative Mileage

Unfortunately no very accurate statistics exist with reference to the extent and classification of Mexican Highways. The figures given in Table No. 3 are at best only approximate and the classification of roads as "good", "average", and "bad" is not very enlightening. Anyone who has traveled in Mexico knows that a road designated as "average" (regular) is probably nothing more than passable, while a "bad" road is very bad indeed. And in any case the figures in Table No. 3 are for the year 1925 and do not take account of the rapid progress in road building during the last five years. Since 1925, according to the latest report of the National Highway Commission some 634 kilometers (380.4 miles) have been surfaced and about 621 kilometers (372.6

TABLE NO. 5

EXTENT AND CLASSIFICATION OF MEXICAN ROADS AS OF DECEMBER 31, 1925
 as given in Estadística Nacional, April 1929, p.158

	<u>Total Kilometers</u>	<u>Good</u>	<u>Average</u>	<u>Bad</u>
Totals	<u>91,609</u>	<u>17,670</u>	<u>47,945</u>	<u>26,994</u>
Aguascalientes	784	334	192	258
Baja California	3,106	339	2,593	2,481
Campeche	1,001	364	375	262
Coahuila	8,201	1,911	4,584	1,906
Colima	399	77	147	1,175
Chiapas	2,045	389	1,017	639
Chihuahua	8,355	1,664	3,919	2,772
Distrito Federal	359	66	131	1,162
Durango	4,772	1,063	2,516	1,553
Guanaajuato	4,399	1,781	2,803	815
Guerrero	4,465	270	1,00	7,116
Hidalgo	2,245	340	1,081	824
Jalisco	5,129	890	2,153	2,086
México	2,718	351	1,547	820
Michoacán	2,282	383	1,121	778
Morelos	360	52	86	222
Nayarit	1,100	53	533	514
Nuevo León	5,860	777	4,405	678
Oaxaca	4,251	723	2,538	990
Puebla	3,995	601	1,737	1,657
Querétaro	1,056	191	652	213
Quintana Roo	168	5	131	32
San Luis Potosí	4,912	1,010	2,627	1,275
Sinaloa	3,612	1,152	1,844	616
Sonora	6,462	1,281	3,408	1,773
Tabasco	608	247	336	25
Tamaulipas	4,608	330	3,120	1,158
Tlaxcala	1,772	289	493	1,990
Veracruz	2,823	668	930	1,125
Yucatán	1,061	122	401	538
Zacatecas	2,701	947	985	769

miles) have been paved.

Some idea of the comparative position of Mexican roads with reference to certain other Latin-American countries may be gained by an inspection of Table No. 4 compiled in 1930 by the United States Department of Commerce. From this table it is apparent that Mexico ranks sixth among the countries listed in mileage of paved roads, eleventh in surfaced roads and third in total road mileage. Another way of estimating Mexico's progress in highway construction is to compare Mexican roads with those of the state of Texas:

		Miles Surfaced	Miles Paved	All other roads	Total
		_____	_____	_____	_____
Texas Highways	1928	20,093	6,122	162,349	185,564
Mexican Highways	1930	380	372	61,387	62,137

It is interesting to note that Texas has more miles of paved roads than Mexico, Argentina, Bolivia, Brazil, Chile, Colombia, Peru and Uruguay combined.

In Table No. 5 are given the figures showing, in dollars, the amounts now being expended by various Latin-American countries on highways. Although the figures for Mexico refer only to the National Highway Commission and do not include expenditures by State and local governments, it will be noted that Mexico ranks well in the forefront of the principal Latin-American countries in the amount which she is spending on her highway program.

Indices of Use and Analyses of Classes of Traffic

In the absence of any very accurate or dependable statistics based on actual traffic counts recourse must be had to

TABLE NO. 4

ROAD MILEAGE IN RELATION TO TYPES OF CONSTRUCTION, 1930

Country	Earth, sand, clay, or gravel, graded and drained		Macadam	All other, including "not specified"		Total
	Unimproved earth					
MEXICO ¹		380	373	61,387	62,137	
Argentina		41,500	2,000	88,197	131,697	
Bolivia	822	2,732	30		3,584	
Brazil	72,312	2,095	963	127	75,497	
Chile	20,045	3,878	358	133	24,414	
Colombia		19,014	243	4	19,261	
Cuba		51	1,323	616	1,990	
Haiti		1,066		6	1,072	
Honduras	165		196		361	
Panama		58	53	568	679	
Paraguay	2,648	1,033	3		3,684	
Peru	6,000	4,805	1,140	57	12,002	
Uruguay	20,317	1,395	1,709	66	22,487	
Venezuela	1,056	1,985		170	2,211	

¹ Figures for Mexico, with exception of total, estimated from data in Comisión Nacional de Caminos "Anuario 1931."

Other statistics from Commerce Reports, United States Dep't of Commerce, Jan. 5, 1931, p. 6

TABLE NO. 5

EXPENDITURES FOR HIGHWAY CONSTRUCTION IN¹
VARIOUS LATIN AMERICAN COUNTRIES

(Amounts in dollars)

Country	1928	1929	1930
Mexico	5,709,743	4,306,930	7,642,920
Argentina	6,692,840	6,691,017	5,977,445
Bolivia	690,000	2,767,000	(2)
Brazil	4,375,000 (3)	7,521,255 (4)	5,546,504 (4)
Chile	11,500,000 (3)	10,094,374	12,902,600
Colombia	4,816,119	9,000,000 (3)	3,240,000 (3)
Cuba	22,017,667	34,857,742	35,876,584
Haiti	688,280	758,827	448,000
Honduras	380,000	375,000	474,000
Panama	2,269,000	2,401,228	2,500,000
Paraguay	344,635	365,000	170,000
Peru	4,068,412	3,932,220	1,480,000
Uruguay	3,627,822	5,000,000	5,740,000
Venezuela	4,493,565	5,800,000	4,432,000

1

Data from Commerce Reports, United States Dep't of Commerce, Jan. 5, 1931, p.4, with figures for Mexico corrected according to the most recent data published by the Comisión Nacional de Caminos. Exchange rate for Mexican pesos against dollars figured at 2.02.

2

Figures not available at date of compiling

3

Estimated

4

Federal expenditures only; does not include local, State, or municipal expenditures, if any.

other indices of the extent to which Mexican highways are being used. Figures for the consumption of gasoline and the number of automobiles throw some light on the problem, although it must be remembered that not all gasoline consumed is consumed by automobiles and that many automobiles are used almost exclusively within the limits of the large cities.

Automobile Statistics

Table No. 6 shows the number of automobile registrations in Mexico from 1925 to 1930. These figures are admittedly incomplete due to the fact that registration laws are not strictly complied with in some states. As they stand, however, they indicate an increase in the number of automobiles in Mexico during the last six years of over 64%. Undoubtedly as the several new highways now under construction are completed the rate of increase of automobiles in Mexico will become much larger.

In Table No. 7 are given the statistics of the distribution of automobiles by states. It is significant that one third of all the automobiles in Mexico are registered in the Federal District.

Although the rate of increase of the number of automobiles in Mexico is relatively high, the number of cars as compared to the total population is still small. In 1930 Mexico had one automobile for every 193 inhabitants. In the same year the ratio in France was one automobile to 31 inhabitants, in Argentina 1 to 30; in Canada 1 to 8, and in the United States, 1 to 4.5. (See Table No. 8.)

TABLE NO. 6
AUTOMOTIVE REGISTRATIONS IN MEXICO¹
1926-1930

<u>Year</u>	<u>Passenger Cars</u>	<u>Busses</u>	<u>Trucks</u>	<u>Total</u>
1926	40,076	5,479	5,999	51,554
1927	43,305	5,344	9,574	58,223
1928	44,161	5,137	11,712	61,010
1929	49,059	5,550	12,527	67,136
1930	62,461	6,299	16,031	84,791

¹ Data supplied by the Departamento de Estadística Nacional

TABLE NO. 7
 AUTOMOTIVE REGISTRATIONS IN MEXICO¹
 as of January 1, 1930

<u>State</u>	<u>Passenger Cars</u>	<u>Busses</u>	<u>Trucks</u>
Aguascalientes	433	58	176
Lower California, North	6,990	28	595
Lower California, South	303	21	94
Campeche	138	16	19
Coahuila	3,423	274	506
Colima	166	33	78
Chiapas	318	71	137
Chihuahua	3,447	123	1,140
Federal District	20,154	1,887	6,152
Durango	916	97	190
Guanajuato	1,471	324	355
Guerrero	143	37	70
Hidalgo	1,184	338	272
Jalisco	2,556	525	400
Mexico	1,549	315	567
Michoacan	805	255	278
Morelos	229	53	129
Nayarit	143	27	32
Nuevo Leon	3,641	81	709
Oaxaca	182	90	94
Puebla	1,479	294	509
Queretaro	328	56	76
Quintana Roo	7	7	5
San Luis Potosí	1,480	145	180
Sinaloa	1,409	151	453
Sonora	2,754	222	943
Tabasco	140	22	44
Tamaulipas	3,125	116	759
Tlaxcala	454	74	79
Veracruz	1,216	371	634
Yucatan	1,285	104	228
Zacatecas	593	91	128
	<u>62,461</u>	<u>6,299</u>	<u>16,031</u>

¹ Statistics supplied by the Departamento de Estadística Nacional

TABLE NO. 8
 PERSONS PER AUTOMOBILE IN VARIOUS COUNTRIES¹
 as of January 1, 1930

<u>Country</u>	<u>Persons per automobile</u>
Mexico	193
United States	4.5
France	31
Canada	8
Germany	99
Argentina	30
Brazil	202
Spain	130
Sweden	45
Japan	697
Uruguay	39
Chile	132
Venezuela	174
Colombia	498
Peru	416

1

Data from Commerce Reports, United States Dep't of Commerce, July 14, 1930, with figures for Mexico corrected according to data supplied by the Departamento de la Estadística Nacional, i.e., automobile registration, Jan. 1, 1930 -- 84,791, and population 1930 -- 16,404,030.

On the other hand in the actual number of automobiles registered in 1930, Mexico ranks 5 among all the countries of the western hemisphere. (See Table No. 9.)

Gasoline Consumption

A second index of the traffic load on Mexican highways is suggested by the statistics of gasoline consumption. In the last five years, from 1926 to 1930, as shown in Table No. 10, gasoline consumption has increased 81.6%, or from 179,812,044 liters (47,470,380 gallons) to 326,469,696 liters (86,253,294 gallons).

Classes of Traffic

There is no way of estimating with any certainty how many of the total number of cars listed for hire in Table No. 11 are engaged in regular passenger or freight traffic on the rural highways of Mexico, but that a large number are so occupied seems to be undoubtedly the case. The number of cars actually registered (see Table No. 12) as engaged in inter-urban freight or passenger service on the National Highways alone reaches a total of 649 passenger cars and busses and probably around 4,000 trucks. How many more cars are engaged in inter-urban freight and passenger traffic on roads other than those included in the national highway system cannot be stated. The number is already sufficiently great, however, to represent a serious problem for the railroads and Mexico must very soon face the necessity of regulating bus and truck traffic.

TABLE NO. 9
 AUTOMOTIVE REGISTRATIONS IN THE WESTERN HEMISPHERE
 as of January 1, 1926-1930

Country	1926	1927	1928	1929	1930
Mexico	51,554	58,223	61,010	67,136	84,791
Argentina	178,050	222,610	266,030	310,805	364,737
Bolivia	1,510	2,020	1,985	2,335	2,705
Brazil	63,656	81,100	136,000	165,200	194,000
Chile	16,970	18,000	19,271	25,440	32,996
Colombia	5,572	7,916	10,236	14,000	16,000
Costa Rica	695	897	1,360	1,651	2,281
Cuba	35,100	38,038	44,937	40,527	50,106
Dominican Republic	3,105	2,830	3,985	4,348	3,853
Ecuador	1,165	1,159	1,542	1,899	1,717
Guatemala	1,479	1,569	2,473	2,802	3,097
Haiti	1,450	1,974	2,043	2,725	2,996
Honduras	418	501	469	691	1,090
Jamaica	4,102	4,983	5,727	6,648	8,572
Nicaragua	406	402	493	742	1,004
Panama	4,175	5,122	4,584	6,527	6,404
Paraguay	730	711	1,018	1,500	1,637
Peru	7,780	9,300	10,525	12,275	14,615
Puerto Rico	12,906	14,750	13,679	13,313	12,491
Salvador	1,080	1,450	1,673	1,881	2,330
Uruguay	23,600	30,060	34,575	40,420	45,975
Venezuela	6,537	10,045	12,650	15,350	17,325
United States	20,051,276	22,137,334	23,262,185	24,629,921	26,653,450
Canada	715,962	828,918	949,504	1,061,830	1,168,188

1 Data from Commerce Reports, United States Dept't of Commerce, Dec. 8, 1930, with figures for Mexico corrected according to data supplied by the Departamento de la Estadística Nacional.

TABLE NO.10
 CONSUMPTION OF GASOLINE AND INCOME FROM¹
 GASOLINE TAX IN MEXICO, 1925-1930

<u>Year</u>	<u>Liters consumed</u>	<u>Gallons consumed</u>	<u>Revenue in pesos</u>
1925 ² (9mos.)	105,971,415	27,976,344	3,179,142.45
1926	179,812,044	47,470,380	5,394,361.32
1927	192,362,778	50,757,630	5,772,219.34
1928	218,699,334	57,736,624	6,579,713.60
1929 ²	259,287,427	68,451,881	10,371,497.09
1930	326,469,696	86,253,294	13,058,798.61

¹ Data from Departamento de Impuestos Especiales, Estadística de Petróleo, 1930, except for figures in column "Gallons consumed", which were obtained by multiplying "liters consumed" by .2642.

² A special tax on first-hand sales of gasoline -- domestic production and imports -- was established by decree published April 6, 1925, at three centavos per liter; increased to four centavos by decree January 11, 1929, and to six centavos by decree of Jan. 1, 1931

TABLE NO.11
 AUTOMOTIVE REGISTRATION IN MEXICO BY TYPES AND USES¹
 as of January 1, 1930

	<u>Passenger Cars</u>	<u>Busses</u>	<u>Trucks</u>	<u>Total</u>
Private	40,166		6,273	46,439
For Hire	19,875	6,246	8,947	35,068
Government	<u>2,420</u>	<u>53</u>	<u>811</u>	<u>3,284</u>
	62,461	6,299	16,031	84,791

¹ Statistics supplied by the Departamento de Estadística Nacional

TABLE NO.12
 AUTOMOBILES REGISTERED FOR PASSENGER TRANSPORT¹
 ON MEXICAN NATIONAL HIGHWAYS -- 1930²

<u>Route</u>	<u>Class</u>	<u>Number</u>	<u>Number of Passengers</u>
<u>Mexico-Puebla Highway</u>			
Mexico-Puebla	Bus	56	25
Mexico-Puebla	Touring car	20	7
Texmelucan-Puebla	Bus	18	20
Cholula-Puebla	Bus	25	25
Puebla-Chiautla	Bus	20	15
Puebla-Matamoros	Touring car	20	7
Mexico-Tezcoco	Bus	20	15
<u>Mexico-Cuautla Highway</u>			
Mexico-Cuautla	Bus	55	15
Mexico-Cuautla	Touring car	15	7
<u>Mexico-Acapulco Highway</u>			
Mexico-Acapulco	Bus	20	15
Mexico-Acapulco	Touring car	10	7
Mexico-Cuernavaca	Bus	20	20
Mexico-Cuernavaca	Touring car	6	7
Mexico-Cuernavaca	Touring car	9	5
Cuernavaca-Iguala	Touring car	9	7
Cuernavaca-Iguala	Touring car	7	5
<u>Mexico-Guadalupe Highway</u>			
Mexico-Toluca	Bus	25	25
Mexico-Toluca	Touring car	15	7
Mexico-Toluca	Touring car	18	7
Mexico-Tianguistenco	Touring car	15	5
Mexico-Zitácuaro	Touring car	2	7
<u>Mexico-Nuevo Laredo Highway</u>			
Mexico-Pachuca	Bus	36	15
Mexico-Pachuca	Touring car	16	7
Pachuca-Zimapan	Touring car	10	7
Pachuca-Zimapan	Touring car	8	15
Mexico-Teotihuacán	Bus	22	15
Mexico-various towns on roads connecting with the Mexico-Pachuca section	Bus	11	15
	Touring car	19	5
Monterrey-Nuevo Laredo	Touring car	8	7
Monterrey-Nuevo Laredo	Bus	15	25
Monterrey-various towns on roads connecting with the Monterrey-Nuevo Laredo section	Touring car	20	5
	Bus	16	15
<u>Mexico-Veracruz Highway</u>			
Santa-Rosa-Orizaba-Córdoba	Bus	45	15
Orizaba-Tehuacán	Bus	8	15
Córdoba-Orizaba	Bus	10	15

1

Statistics supplied by Secretaría de Comunicaciones y Obras Públicas

NOTES AND

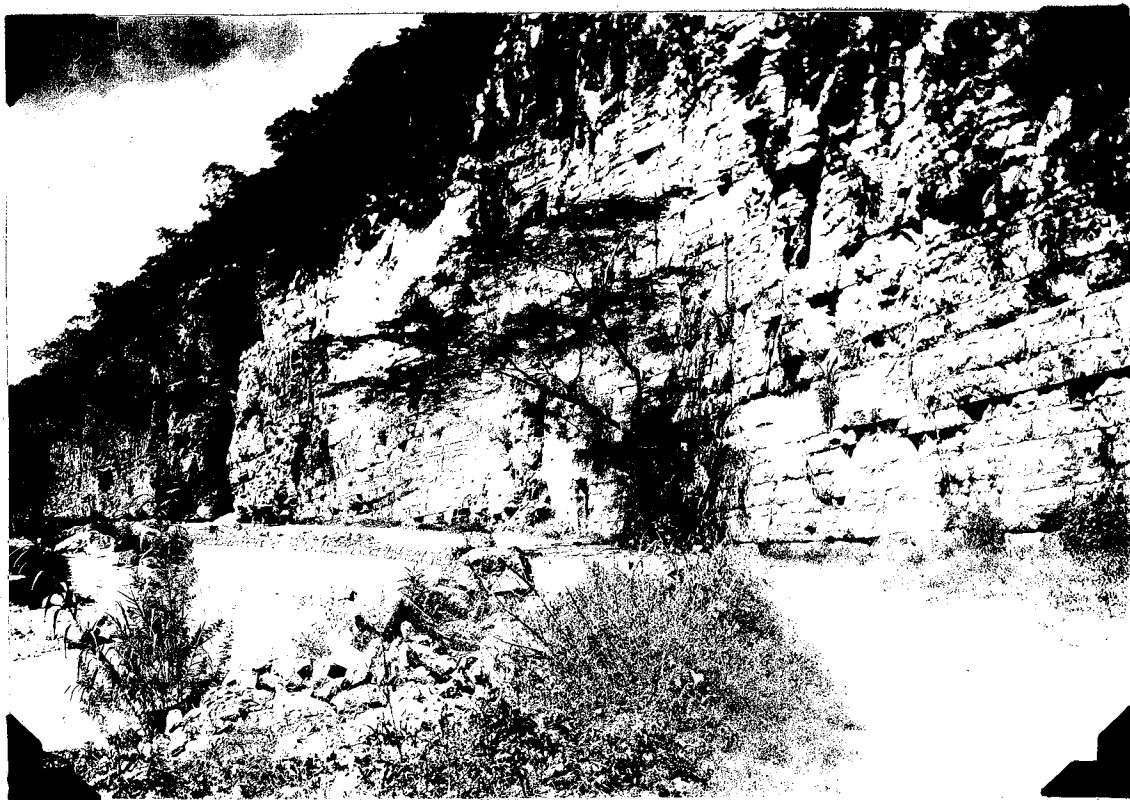
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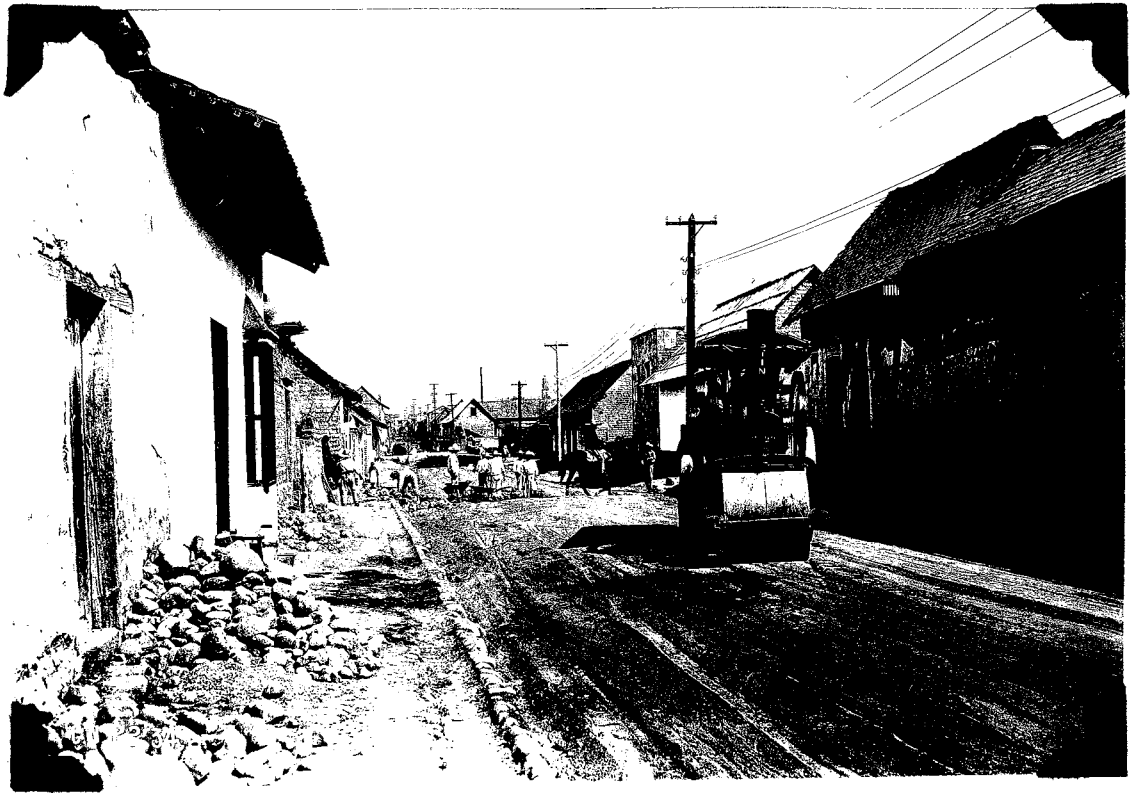
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VIEW OF THE DIRT ROAD LEADING TO THE BARN AT THE FARM



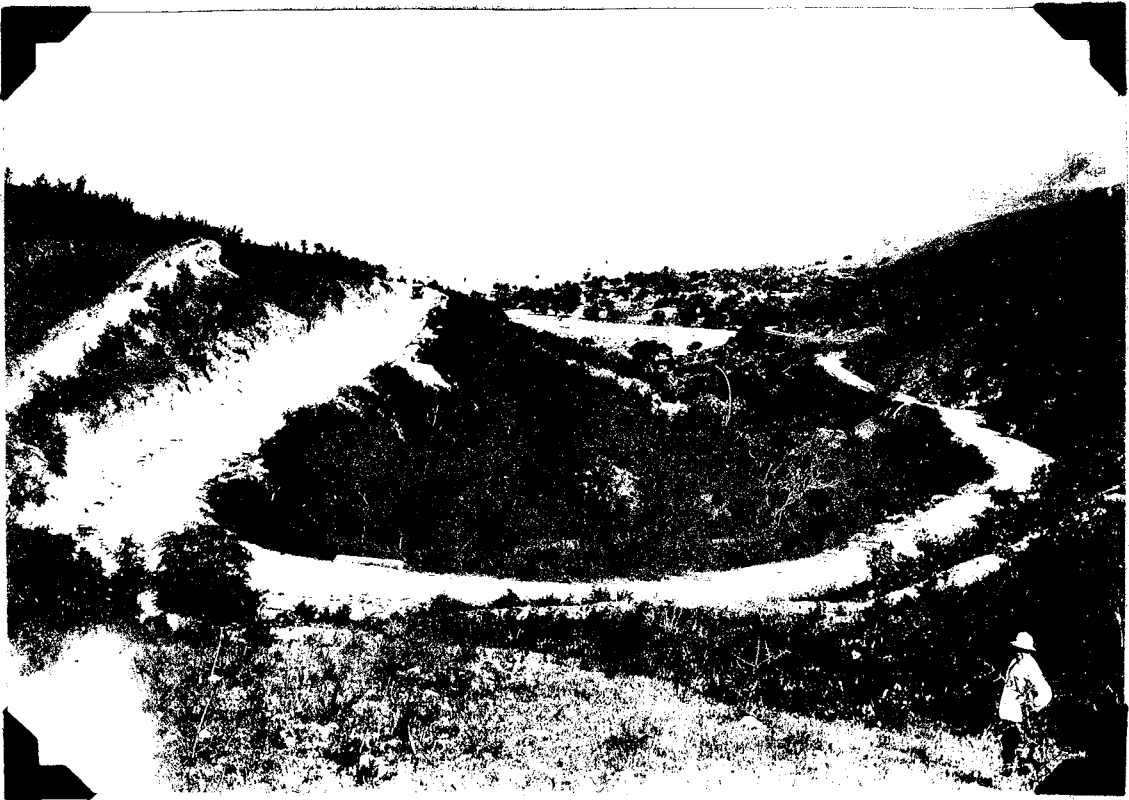
VIEW OF THE CLIFF FACE AT THE FARM



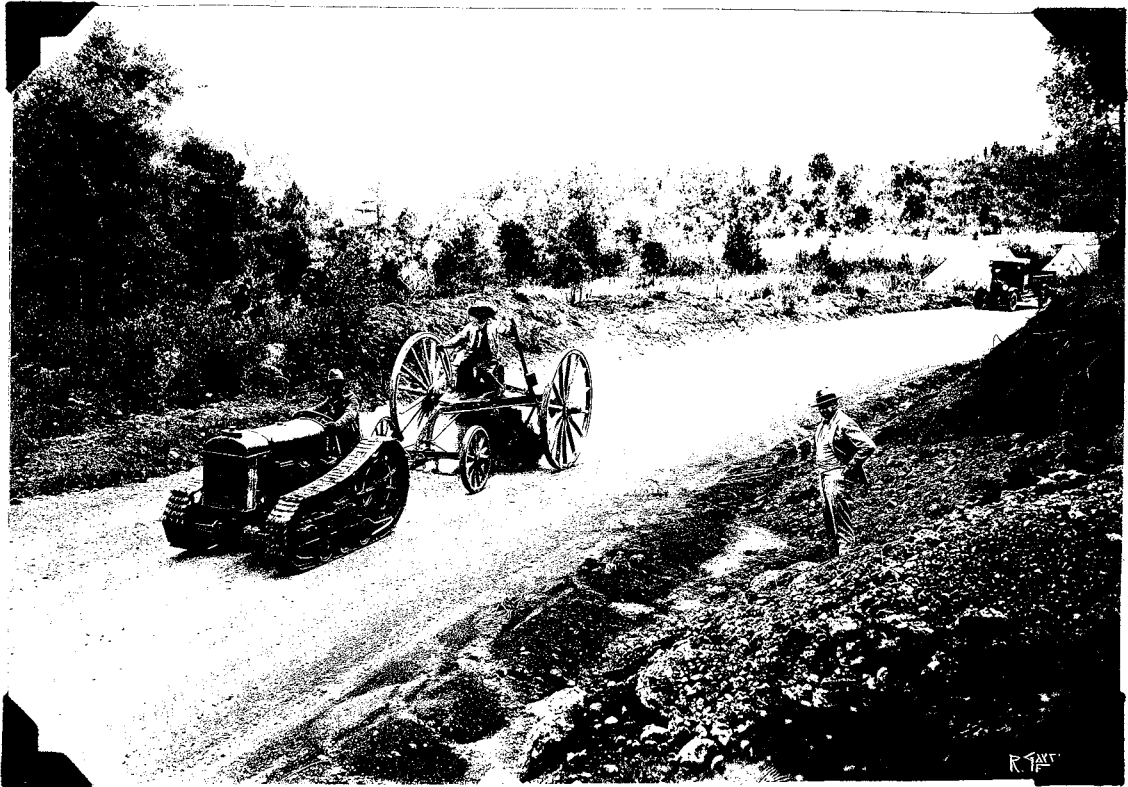
THE HIGHWAY TO CHALUPPA SHOWS THE TOPOGRAPHY OF THE AREA



THE HIGHWAY TO CHALUPPA SHOWS THE TOPOGRAPHY OF THE AREA -- NEAR CHALUPPA

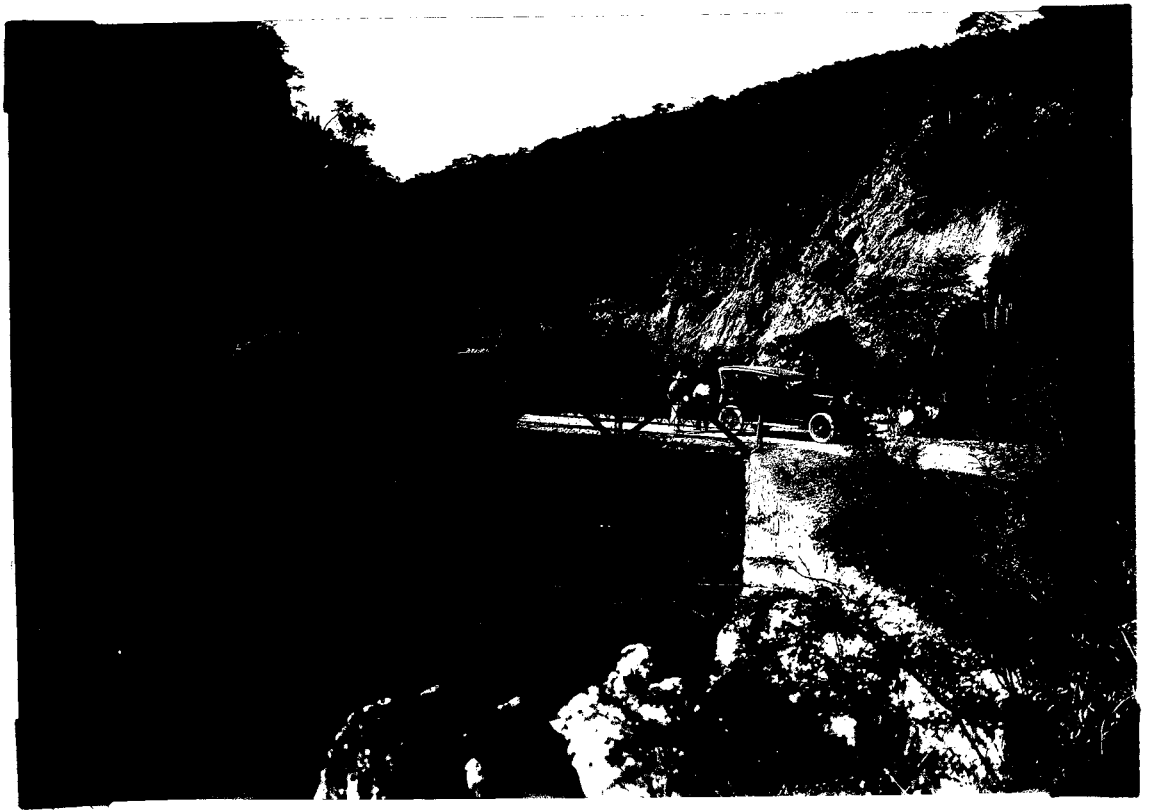


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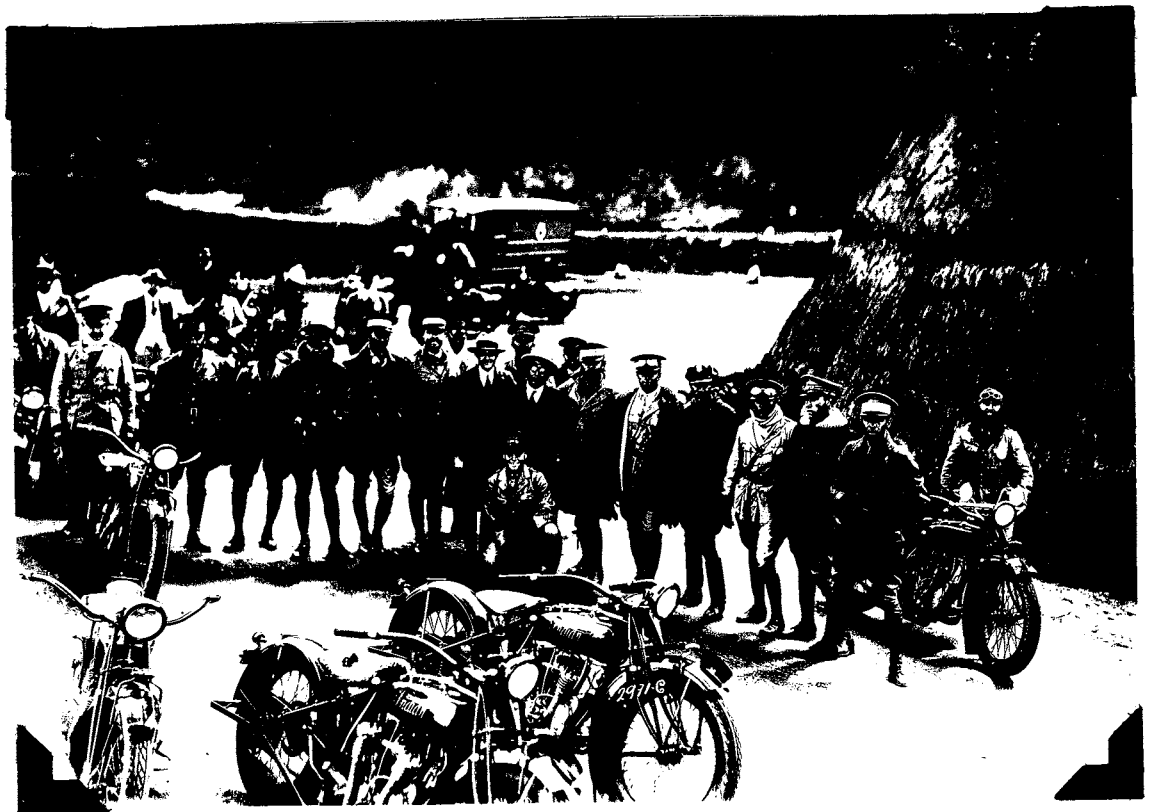


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R. TAYLOR



PETAQUIJÁS BRIDGE -- MEXICO CITY-ACAPULCO ROAD



MOTORCYCLE POLICE CORPS -- MEXICO CITY-BUENAVISTA HIGHWAY