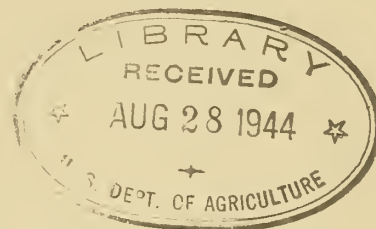


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U. S. DEPARTMENT
OF AGRICULTURE
Soil Conservation Service



GUAYULE: A LIST OF REFERENCES

Compiled by
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Assistant Librarian

Soil Conservation
Bibliography No. 4
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FOREWORD

Using the resources of the libraries listed in "Sources consulted", efforts were taken to make this alphabetical list as complete as possible. All phases of guayule - the shrub, extraction of rubber from it, and the manufacture of finished products from this rubber - are covered.

In the heyday of the wild shrub industry in Mexico, during the first decade of this century, references of some kind were made in many issues of the trade journals, especially India Rubber World. Since many of these were small items, it was decided, with few exceptions, to exclude those less than a half-page in length.

Only published items are included and no attempt was made to search for references to newspaper articles. However, a few rather long, signed articles came to the attention of the compiler, and have been included.

For convenience, Department of Agriculture Library call numbers have been inserted for items available in that Library.

Numerical symbols in the index refer to item numbers.

Alan J. Blanchard
March 1, 1942

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Card catalogs of the following libraries:

Library of Congress
Pan American Union
U.S. Bureau of Agricultural Economics
U.S. Bureau of Plant Industry
U.S. Department of Agriculture
U.S. Department of Commerce
U.S. Patent Office
U.S. Soil Conservation Service

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GUAYULE
A List of References

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Assistant Librarian

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processing of the compounds are discussed, and the formulas are given."

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Dried plants now bring from \$30 to \$40 a ton. The plant will grow on very poor and dry land and the crop can be worked up

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Letter to the editor: Writer claims to have operated at Torreón, Mex., in Nov. 1904, the first plant extracting rubber from guayule by mechanical means. He saw guayule plants successfully grown at Tucson, Ariz., on University of Arizona experimental plot about 1915.
54. Escobar, Rómulo. El guayule y su propagación. Ciudad Juárez, Mex., Estac. Agr. Expt. Bol. 25. 30pp. Mexico City, Secretaría de fomento, 1910. 102 C49
Spanish. Translated title: Guayule and its propagation.
History, description, extraction, and reproduction
Reviewed by F.E. Lloyd in Amer. Rev. Trop. Agr. 1(8/9):251-256. Aug./Sept. 1910. 26 R322
Abstract in Chem. Abs. 5(12):2189-2190. June 20, 1911. 381 Am33C
55. The extraction of guayule rubber. India Rubber World 59(2):85, illus. Nov. 1918. 305.8 In2
"The mechanical extraction of guayule rubber consists, briefly, in reducing the shrub to pulp and separating the rubber by flotation. The product is then deresinated, sheeted, and dried, ready for shipment to the rubber manufacturer."
56. Federov, S.M. Brediteli kauchukonosnogo rastenii-guañiuly (Parthenium argentatum Gray). Subtropics 2(3/4):112-114. Mar./Apr. 1930. 20 Sul
Russian. Translated title: Insects injurious to the resiniferous plant guayule (Parthenium argentatum Gray).
Enumerates American insects, which are not yet being met with on Crimean plantations. However, great many local insects are injurious to the plant, threatening underground parts as well as stems, leaves, and flowers.

57. Ferguson, W.W. California may steal the rubber industry. Los Angeles Daily News, Oct. 22, 1941, p. 35.
"Fred S. McCargar, secretary of the Salinas valley national defense committee, and G.A. Lee, Salinas farm manager of the Intercontinental Rubber Co. . . . have installed in the Siltmore hotel an exhibit showing the present development of rubber manufacture from the guayule plant."
Gives description of plant, cultivation, and extraction.
58. Finley, H.M. What about this new rubber industry? Product accepted on commercial parity with that of tropics extracted from desert shrub now being successfully cultivated in California - guayule to have thorough trial in southwest. Los Angeles Sunday Times, Farm and Orchard Mag., Nov. 27, 1927, pp. 2, 6, 14.
Story of its cultivation. "Time alone will tell whether this American rubber industry is to take its place among the important agricultural developments of the country. Very rarely, it is certain, has any crop introduction ever been submitted to such an exhaustive advance investigation before being launched on a commercial basis."
59. First rubber crop harvested in California. Pop. Mechanics Mag. 55(5): 728-729, illus. May 1931. 291.8 P81
Guayule plantings started in Salinas valley in 1926. Now the care and cultivation of these shrubs is entirely mechanized.
60. Fitzpatrick, George. New Mexico can grow rubber. New Mex. 20(3): 17, 26-27, illus. Mar. 1942. 288.8 N46
"New Mexico soil and climatic conditions are suitable to the growing of guayule, particularly the southern part of the state, and the state's congressional delegation has been assured of an allotment of seed for New Mexico from the Department of Agriculture."
61. For more guayule. India Rubber World 105(4): 393. Jan. 1942. 305.8 In2
Senator Downey, on Dec. 22, 1941, introduced bill calling for Department of Agriculture to plant 45,000 acres of guayule. William O'Neil, president of the General Tire & Rubber Co., urges government subsidy.
62. Forbin, V. L'arbre a caoutchouc des déserts mexicains. Nature [Paris] no. 2448, pp. 148-149, illus. Mar. 5, 1921.
French. Translated title: Rubber plant of the Mexican deserts.
Gives description, history of the plant, and the extraction process.
Abstract in English in Internatl. Rev. Sci. and Pract. Agr. [Rome] 12(7): 852-853. July 1921. 241 In8
63. Fox, C.P. The discoverer of guayule. India Rubber World 39(4): 130. Jan. 1909. 305.8 In2
Letter to the editor telling of John Milton Bigelow, his discovery of guayule, and Asa Gray's later description of it in 1859.

64. Fox, C.P. Excrement of guayule-fed animals [abstract]. Science, n.s. 33(844):345. Mar. 3, 1911. 470 Sci2
Presented before Division of Agricultural and Food Chemistry, American Chemical Society, 43d general meeting, Minneapolis, Dec. 28-31, 1910.
"During time of drought goats feed upon the tender branches of the guayule, *Parthenium argentatum*. The leaves of this plant do not contain rubber, but there is a small amount present in the twigs. The solid excrement of the guayule foraging animals does not contain a trace of caoutchouc.
Pingue (Colorado rubber weed) is regarded by stockmen as poisonous to sheep. In this case death is caused by clogging of the digestive organs with undigested rubber. Goats are not affected by guayule." - Entire abstract.
65. Fox, C.P. The manufacture of mechanical guayule. India Rubber Rev. 10(2):52. Feb. 15, 1910.
Letter to the editor.
66. Fox, C.P. Technical determination of caoutchouc in guayule. Jour. Indus. and Engin. Chem. 1(10):735-736. Oct. 1909. 381 J825
Abstract in Chem. Abs. 3(24):3012. Dec. 20, 1909. 381 Am33C
67. Fron, and Francois. Le "guayule", plante a caoutchouc du Mexique. Agr. Prat. des Pays Chauds 1(1):105-109, illus. July/Aug. 1901. 26 Ag81
French. Translated title: Guayule, rubber plant of Mexico.
Botanical description.
68. Fulmer, H.P. Guayule rubber; speech of Hon. Hampton P. Fulmer of South Carolina in the House of Representatives... February 5, 1942. Cong. Rec. (Daily ed.) 88(27):A447-A448. 1942. 148.2 R24
77th Congress, 2d session.
Delivered during House consideration of S. 2152, the guayule bill.
Only partly on guayule.
69. Gándara, Guillermo. Estudio botánico del guayule. Mex. Dir. Gen. Agr. Bol. 3(4):317-320, illus. Apr. 1913.
Spanish. Translated title: Botanical study of guayule.
70. General notices respecting economic products and their development; the guayule rubber of Mexico. [Gt. Brit.] Imp. Inst. Bul. 4(2): 114-117. 1906. 26 G79
"A short account... of its characters and of the methods employed for obtaining the rubber."
Reprint in India Rubber Jour. n.s. 32(5):249-250. Aug. 27, 1906. 305.8 In21
71. Gleason, Sterling. We now grow our own rubber; Mexico's wild weed, guayule, raised on 5600 acres in California, yields precious latex. Pop. Sci. Monthly 119(1):18-19, 120, illus. July 1931. 470 P81
Describes the history of the plant, Dr. W. R. McCollum's research in cultivation, extraction, and the mechanization of the industry.
"If the deadly blight which is the scourge of the hevea tree

should sweep through the tropical plantations as it has already done in Brazil, guayule rubber might avert a serious world-wide rubber famine."

72. Government tests indicate commercial utility of guayule rubber; guayule said to be of almost equal utility to Hevea and even superior for some purposes; big development under way. India Rubber and Tire Rev. 26(8):22, 26, illus. Aug. 1926. 305.8 In23
Preliminary reports of Bureau of Standards tests for Intercontinental Rubber Company on guayule grown in California, Arizona, Texas, and Mexico. (For published report see item no. 237)
73. Greeves-Carpenter, C.F. American-grown rubber. Compressed Air Mag. 43(5):5601-5603, illus. May 1938.
Includes description of the plant and of the Intercontinental Rubber Company's growing and processing operations.
74. Grünfeld, Otto. Altes und neues über kautschukpflanzen. Kautschuk 12(9):171-174. Sept. 1936. 305.8 K16
Bibliographical footnotes.
German. Translated title: The old and the new regarding rubber plants.
Includes guayule.
75. Guayule. Gummi Ztg. 24(38):1340-1341. June 17, 1910. 305.8 G95
Article in German.
Brief history of its development in Mexico.
76. Guayule. India Rubber Rev. 8(1):13-14. Jan. 15, 1908.
"The botanical department of the University of Texas has demonstrated that the guayule shrub... is not an exclusively arid growth... The only question yet to be determined in the experiment... is whether the excess of rainfall causes it to lose any of its rubber-producing qualities."
77. Guayule. Rubber Age 20(3):123. Nov. 10, 1926. 305.8 R82
Editorial on the future of the guayule industry through successful cultivation and volume production.
78. Guayule. Rubber Age 50(4):286. Jan. 1942. 305.8 R82
Representative Anderson, California, introduced into the House on Jan. 6, 1942, a bill to provide for the planting of 75,000 acres of guayule, in contrast to his earlier bill calling for 45,000. William O'Neil, president of the General Tire and Rubber Company, is one of the leading advocates of guayule cultivation.
79. Le guayule. Soc. Belge d'Etudes Colon. Bul. 14(5):437-441. May 1907. 26 Sol
Article in French.
History, description, and manufacture.
80. Guayule - a high grade rubber; botanical source - occurrence, yield and production - extraction and preparation - characteristics of guayule. India Rubber World 72(5):652-653. Aug. 1925. 305.8 In2
"The plant... was discovered in northern Mexico in 1852 by

Dr. J.M. Bigelow, and later described and named *Parthenium argentatum* by Professor Asa Gray of Harvard"

Discusses the effect of accelerators on guayule.

81. Guayule and a blowout in the desert; the farmers' income and the price of tires. *Calif. Countryman* 13(2):17, illus. Nov. 1926. 6 Un34
"The farmers of the State of California, it seems probable, will be growing rubber by the contract as they have grown beets in the past."
Discusses Intercontinental Rubber Company's work at Salinas.
82. Guayule as a rubber softener; a mix containing guayule will cure properly when small amounts of certain organic acids are added. *Rubber Age* 16(8):266. Jan. 25, 1925. 305.8 R82
83. Guayule cultivation in the United States, a rubber preparedness suggestion. *India Rubber World* 55(3):133-135, illus. Dec. 1916. 305.8 In2
"References," p. 135.
"The long continued series of revolutions in Mexico reduced the average yearly export of 10,000 tons of guayule rubber to... 1408 tons during the 12 months ending June 1916."
84. Guayule extraction mill; first factory in United States to process new American farm product starts work on West Coast. *India Rubber World* 83(6):53-55, illus. Mar. 1931. 305.8 In2
Intercontinental Rubber Company's subsidiary, American Rubber Producers, Inc., formally opens \$150,000 plant near Salinas, Calif., on Feb. 6, 1931. Article tells how rubber is washed and caked, how crops are developed, and what the present and potential uses of the rubber are.
85. The guayule factories of Mexico. *India Rubber World* 34(4):329-330, illus. July 1906. 305.8 In2
Gives illustrations of Continental's Torreon plant, output of Mexican guayule industry, and uses of the rubber.
86. Guayule in the United States. *India Rubber World* 39(2):58. Nov. 1908. 305.8 In2
Texas company, Big Bend Manufacturing Co., acquires right to utilize guayule plants on state school lands. Texas Rubber Co. is formed.
Article gives Asa Gray's description of the shrub in 1859.
87. Guayule industry, its origin and development. *Pan-Amer. Mag.* 33(5): 225-227. Oct. 1921. 110 P19
Gives history of the industry, description of plant, and prices and Mexican exports around 1910 to 1920.

88. Guayule interests. India Rubber World 36(5):332,illus. Aug. 1907. 305.8 In2
Includes operations of producing companies and statement about, and picture of, Dr. Adolpho Marx, associated with the guayule company L'Anglo Mexicana.
89. Der guayule-kautschuk. Gummi Ztg. 21(17):416-417. Jan. 25, 1907. 305.8 G95
German. Translated title: Guayule rubber.
Discusses the Mexican producing companies and the qualities of the rubber.
90. Guayule legislation introduced in House. India Rubber World 104(4): 54. July 1941. 305.8 In2
H.R. 5030 introduced June 11, 1941 to "provide for the planting of 45,000 acres of guayule in order to make available a domestic source of crude rubber for emergency and defense uses". This bill would create in the U.S. Dept. of Agriculture a \$25,000,000 corporation to be known as the Federal Guayule Corporation. The present condition of U.S. guayule plantings is discussed.
91. El guayule, planta silvestre que podría ser nueva fuente de riqueza. Rev. de Agr. [Costa Rica] 13(9):437,439-440. Sept. 1941. 8 Es1
Spanish. Translated title: Guayule, the wild plant that may become a new source of wealth.
Translated by Emilio Artavia from Everybody's Weekly, Phila., on the history of the guayule plant, experiments made in U.S. for growing and domesticating it, and its characteristics.
92. La guayule, plante à caoutchouc; sa mise en culture aux États-Unis. Génie Civil 97(4):87-89. July 26, 1930. 290.8 G29
French. Translated title: Guayule rubber plant, its cultivation in the United States.
Consists mainly of excerpts of botanical information from M.W. Russell's "Le guayule..." and D. Spence's "Cultivation and preparation of rubber in the U.S." (See items nos. 219 and 231.)
93. Guayule rubber. Kew Roy. Bot. Gard. Bul. Misc. Inform. no. 6, pp. 211-212. 1910. 451 K51B
Seeds were received at Kew Gardens in London and the bulk of them distributed to sub-tropical colonies. The balance were germinated at Kew and are doing well.
Article includes dispatch from Mexican Minister showing guayule industry to be thriving there.
94. Guayule rubber farms aided by new machinery. Business Week no. 80, p. 24, illus. Mar. 18, 1931. 280.8 Sy8
95. The guayule rubber interest. India Rubber World 38(2):250,illus. May 1908. 305.8 In2
Encouraging experiments of Elias Delafond, Mexico City, in cultivation of guayule.

96. Guayule rubber may help solve tire difficulty. Henderson asks prices be not raised above December 6 level. Coop. Consumer 8(24):7. Dec. 31, 1941. 280.28 C7836
97. The "guayule" rubber plant-III. India Rubber World 33(1):3-4, illus. Oct. 1905. 305.8 In2
Continental Rubber Company will build factory at Torreon, Mexico, controlling extraction processes patented by W.A. Lawrence. Article gives description of latter and discusses operations of Coahuila Mining and Smelting Co., Ltd., and the International Guayule Rubber Co. (For parts I-II of this article see item no. 52.)
98. Guayule rubber production resumed; Border Rubber Co. [at Marathon, Tex.] producing a ton a day from guayule shrubs; plant operating as subsidiary of C.T. Wilson Co. of New York. India Rubber & Tire Rev. 25(10):78, illus. Oct. 1925. 305.8 In23
99. Guayule rubber recovery; improved method of separating guayule from its natural fiber entanglement. India Rubber World 79(5):64, illus. Feb. 1929. 305.8 In2
Yeandle process.
100. The guayule rubber situation. India Rubber World 38(6):395-396, illus. Sept. 1908. 305.8 In2
"References," p. 396
"It may seem singular to some that, whereas business depression has prevailed in Mexico during a year past, the same as elsewhere, the output of guayule rubber continues to grow."
101. Guayule, sein verwendung und verarbeitung. Gummi Ztg. 24(25):856-857. Mar. 18, 1910. 305.8 G95
German. Translated title: Guayule, its use and manufacture.
102. Guglielminetti, Silvio. Il guayule, pianta da caucciù coltivabile in Italia e colonie. Costa Azzurra Agr. e Floricola 16(2):32-40. Feb. 1936; 16(3):59-66, illus. Mar. 1936. 16 C82
Italian. Translated title: Guayule, rubber plant cultivable in Italy and her colonies.
History, varieties, diseases and parasites, rubber content, extraction, and culture in America and Russia.
Abstract in Bot. Centbl. 171(13/14):399. Aug. 26, 1937. 450 B65
Also printed as San Remo, Italy. Staz. Sper. di Floricoltura "Orazio Raimondo," Pub. 10. 18pp., illus. San Remo, Italy [1936?] 86 Sa5
103. Hamm, T.C. Guayule industry. U.S. Bur. Manufactures. Daily Consular & Trade Rpts. 15(188):742-743. Aug. 10, 1912. 157.7 C76D
"The growth of the guayule rubber industry in the states of Durango and Coahuila has been truly remarkable... The plant occurs only in the wild state; several attempts have been made to propagate and cultivate it, but they all have been more or less unsuccessful."

104. Harries, C. Zur kenntnis der kautschukarten. Deut. Chem. Gesell. Ber. 36(9):1937-1941. June 20, 1903. 384 B45
German. Translated title: Information on kinds of rubber.
Includes guayule.
Abstract in Chem. Zentbl. 74, II(3):201-202. July 15, 1903. 384 C42
105. Harvesting American-grown rubber in California. Sci. Amer. 152(3): 116, illus. Mar. 1935. 470 Sci25
Photograph, with explanatory remarks as follows: "Guayule, a domesticated wild desert shrub which yields 15 to 19 percent rubber, is harvested at Salinas, California, by a subsidiary of the Intercontinental Rubber Company, which employs tractors for drawing diggers that uproot the plants. After drying in the sun these plants are picked up by another tractor-drawn machine... which feeds them into a cutter, chops them into pieces and blows these pieces through the arched conduit shown, into a trailing truck. At the mill the chopped plants are fed through rotating tube mills containing flint pebbles. This releases the rubber."
106. Hausser, E.A. Home-grown and home-made rubber. India Rubber World 104(6):27-29, illus. Sept. 1941. 305.8 In2
Discusses hevea, reclaimed, synthetic, and guayule rubber. "Guayule rubber could be successfully grown in this country, resulting in a rubber which can be handled without any change in our present processing methods."
Reprint in India Rubber Jour. 102(17):9-11. Oct. 25, 1941;
Abstract, 102(26):518-519. Dec. 27, 1941. 305.8 In21
107. Hillier, J.M. Guayule rubber (*Parthenium argentatum*, A. Gray) Kew Roy. Bot. Gard. Bul. Misc. Inform. no. 7, pp. 285-294. 1907. 451 K51B
Composite article, containing: "The first communication received at Kew on the subject of guayule was... dated 29th December, 1902, requesting information regarding the following extract from Circular No. 28 issued by the United States Department of Agriculture (the footnote referred to in item no. 38)... This passage doubtless refers to the guayule, the name '*Synathereos mexicanus*' being probably intended for '*Sinantéreas mexicanas*', i. e., Mexican Compositae."
Max Müller's report (see item no. 180)
Memorandum from British Vice-Consul Kennedy in Mexico.
Reprint of article by Dr. P. Olsson-Seffer from "The Mexican Investor".
Abstract of Rudolf Endlich's "Ueber den gegenwärtigen stand und die aussichten der guayuleindustrie" (see item no. 52)
Partially reprinted in India Rubber Jour. (n.s.) 34(6):305. Sept. 9, 1907. 305.8 In21
108. Holman, R.L. America's rubber farms: The guayule shrub, as rubbery as the tropical rubber plant, is being grown right here in California; it may lead us to the path of self-sufficiency. Forbes 48(9):12-13, 32, illus. Nov. 1, 1941
"While Dr. McCallum has tested it in four states, many authorities believe that it can be successfully produced anywhere in the South where cotton will grow well."

109. Holt, E.G. Guayule rubber. U.S. Bur. Foreign and Dom. Com. Rubber Div. Spec. Cir. 1270. 3pp., processed. [Washington, 1926]
"Chihuahua, the northern part of Zacatecas and San Luis Potosi, the eastern part of Durango, and the southern districts of Coahuila are the most important guayule districts in Mexico." Discusses growth and decline of Mexican industry, domestication of shrub in United States, guayule production, including table of estimated production in Mexico for each year, 1905-1925.
110. Holt, E.G. Mexico an important source of guayule rubber. U.S. Bur. Foreign and Dom. Com. Dom. Com. 29 (2):15. Jan. 8, 1942. 157.54 D713
Includes table giving pounds, value, and cost per pound of U.S. imports from Mexico, by years from 1929 to 1940.
111. Home-grown rubber. Lig. Digest 89(4):25. Apr. 24, 1926.
Includes letter from U.S. Dept. of Agriculture in regard to commercial guayule operations in Texas and experimental work in California and Arizona.
112. Hornaday, W.D. Guayule shrub as a source of crude rubber supply. Dun's Internatl. Rev. 51:39-41, 64, illus. Aug. 1928.
"Commercializing the guayule shrub as a source of crude rubber supply may within the next few years become an industry of vast importance in many semi-arid regions of the world, according to experts who have studied the possibilities of domesticating the wild plants."
113. Hutchinson, J. Parthenium argentatum A. Gray. Hookers Icones Plantarum, Ser. 4, v. 10, tabula 2998. 3pp., 1 pl. 1913. 450 H76I
Thorough botanical description.
114. Intercontinental rubber company. Report to stockholders concerning the Intercontinental Rubber Company, its property and business. 28pp., illus. New York, Continental Rubber Co. of N.Y. [1926]
"Intercontinental Rubber Co. is a holding and operating company engaged, through its subsidiaries, in the production of plantation rubber in Sumatra and of guayule rubber in Mexico and the United States... The subsidiary companies... are (1) Continental Plantation Company [Sumatra]... (2) Continental Mexican Rubber Co. and Cedros Ranch Co. The first named owns and operates four factories in Mexico for the production of guayule rubber, and the latter owns about 1,800,000 acres of land in Mexico, from which a portion of the guayule shrub... is obtained... (3) Agricultural Products Corporation and Rubber Exploration Co., which own a ranch in Arizona and a number of scattered small areas in California. On these properties, experimentation and development work have been conducted over a period of years... Under present methods a given amount of guayule rubber can be produced with only one-fifteenth of the labor required for a corresponding quantity of plantation rubber. With the resin extracted from the guayule product, the ratio would still be 12 to 1 in its favor. This advantage is sufficient to offset the much lower wages paid to laborers in the plantation areas... Company expects gradually

to increase its commercial operations and...the first commercial planting of 200 acres in California is under way, and seeds are being started for an additional 600 acres of plants to be set out next winter. (4) Continental Rubber Co. of New York, which sells and handles the output of guayule rubber..."

"Guayule rubber [Habitat, production and use, operations of company's plants, Dr. B. McCallum's experiments on cultivation in the U.S.]", pp. 13-28.

115. Ivanow, Sergius. Einiges über das Studium der kautschukhaltigen Pflanzen und des Kautschuks der U. d. S. S. R. Kautschuk 6(11): 237-239. Nov. 1930; 6(12): 256-258. Dec. 1930.
German. Translated title: Notes on the study of rubber-bearing plants and rubber in U. S. S. R.
Includes guayule.
116. January tire quota is 357,000; only "essential" vehicles to get consideration; government speeding output of synthetic, guayule, wild rubber. Automotive News 17(2701): 1, 8. Jan. 5, 1942.
117. Jardine, W. M. Rubber, a crop with possibilities... Nation's Business 19(1): 27-30, 110, 112, illus. Jan. 1931. 286.8 N212
Guayule, p. 30, 110.
"A large share of the developments in guayule seed selection, germination, production, and mechanical and chemical problems in extraction, have been achieved by a single commercial company... However, the U. S. Dept. of Agriculture has by no means been idle. The Department's experimental field of guayule at Shafter, Cal., is making remarkable progress."
118. Kalashnikov, V. M. K biologii tsveteniia Parthenium argentatum Gray. Trudy Prikl. Bot., Genet., i Selk. (Bul. Appl. Bot., Genet., and Plant Breeding) 24(3): 85-98, illus. 1930. 451 R92
Russian, with English summary. Translated title: A contribution to the biology of flowering in Parthenium argentatum Gray.
119. Kalashnikov, V. M. Materialy k metodike selektsii gvaiuly (Parthenium argentatum Gray) Trudy Prikl. Bot., Genet., i Selk. (Bul. Appl. Bot., Genet., and Plant Breeding) 27(2): 489-560, illus. 1931. 451 R92
Bibliographical footnotes.
Russian, with English summary. Translated title: A contribution to the methodics of breeding the guayule (Parthenium argentatum Gray).
120. Kauffman, Erle. Guayule, the victory rubber. Amer. Forests 48(2): 72-73, 84, 92, illus. Feb. 1942. 99.8 F762
Senate Committee on Military Affairs reports favorably on S. 2152, the bill to provide for planting of 45,000 acres of guayule. Similar bill, H. R. 6299, is introduced in House. "Guayule cannot be expected to perform the miracle of relieving the present rubber emergency. It is a practicable and reasonably efficient but limited source of rubber. It produces a product acceptable to rubber manufacturers and usable without alteration of manufacturing machinery. It can be grown, harvested, and

processed at costs not unreasonably high, but substantially higher than the costs of producing rubber from the Para rubber tree in the American tropics. Its present value lies in the fact that it can be harvested and processed from four to five years after field planting, a considerably shorter cycle than the Para tree."

121. Kavka, B. and Zelníček, A. Výsledky pokosů s pěstováním kačukodárné rostliny *Parthenium argentatum* Gray v letech 1932-1935. (Ergebnisse von anbauversuchen der kautschukliefernden pflanze *Parthenium argentatum* Gray in den jahren 1932-1935). Ceskoslov. Akad. Zeměděl. Vest. 12(6/7):475-480, illus. June/July 1936. 19.5 C332
"Literatura," pp. 479-480.
Czech, with German summary. Translated title: Results of experiments on the cultivation of the rubber-bearing plant *Parthenium argentatum* Gray in the years 1932-1935.
122. Kieffer, D.L. Guayule, our own wartime rubber crop. Pacific Rural Press and Calif. Farmer 14(7):276. Apr. 5, 1941. 6 P112
"How about using farm land and farmers instead of crude oil, factories and scarce and expensive industrial labor or foreign plantations to make the rubber we need in order to feel safe? ... If the government would subsidize the growers of guayule by guaranteeing them a price of 25¢ per pound... they could dodge the overproduced crops."
123. King, A.H. Guayule and industrial preparedness. Metall. and Chem. Engin. 15(10):563-566, illus. Nov. 15, 1916. 381 E12
Shows need for home rubber industry in war times and gives description of shrub and processes of extraction. "Since 1912 guayule has been comparatively unimportant. This decline was brought about by internal conditions in Mexico and by wasteful methods of harvesting."
Abstract in Chem. Abs. 11(3):307. Feb. 10, 1917. 381 Am33C
124. Kirchhof, F. Die rolle des kautschukohlenwasserstoffes in der pflanze. Kautschuk 12(3):45-48. Mar. 1936. 305.8 K16
Bibliographical footnotes.
German. Translated title: The role of rubber hydrocarbon in the plant.
Experiments with cortical tissue of guayule, p. 47.
125. Kirkwood, J.E. The growing of guayule in relation to the soil. Amer. Rev. Trop. Agr. 1(5/6):142-158, illus. May/June 1910. 26 R322
"Literature cited," p. 158.
"Guayule... grows most abundantly on the foothills or lower slopes of the mountains, where the soil is of limestone origin."
126. Kirkwood, J.E. Guayule rubber industry. Sci. Amer. 101(2):24, 26, illus. July 10, 1909. 470 Sci25
Discusses extraction processes, history of the industry, and supply of guayule.
"The only hope of prolonging the business seems to be in so harvesting the plants that the roots are left in the ground; from these new shoots will arise, and in a few years possibly yield another crop worth the taking. How long this process can be kept up profitably is at present unknown."

127. Kirkwood, J.E. The life history of Parthenium (guayule). Amer. Rev. Trop. Agr. 1(7):193-205, illus. July 1910. 26 R322
"Literature cited," pp. 203-204.
128. Kirkwood, J.E. Propagation of guayule by seeds. Amer. Rev. Trop. Agr. 1(2):34-43. Feb. 1910; 1(3/4):77-84. Mar./Apr. 1910. 26 R322
Bibliographical footnotes.
Describes work done by Dept. of investigations of Continental Mexican Rubber Co. in state of Zacatecas, Mexico.
"Seeding operations... results were disappointing so far as the feasibility from an economic standpoint was concerned, but the facts discovered will doubtless be of interest to the botanist, the manufacturer, and to those who are attempting to propagate the plant."
Abstract in U.S. Off. Expt. Stas. Expt. Sta. Rec. 23(6):543-544. Nov. 1910. 1 Ex6R
129. Kokieva, E. Istoriiia raz'itiiia zhenskogo u Parthenium argentatum G. (guayule). Jour. Pot. de l'URSS 17(1):72-99, illus. 1932. 451 R923
Bibliographical footnotes.
"Literatura," pp. 95-97.
Russian, with English summary. Translated title: The development of the female gametophyte in Parthenium argentatum G. (guayule).
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Reprint in India Rubber Jour.95(10):295-296, 298-300. Mar.5, 1938; 95(11):322-323. Mar.12, 1938. 305.8 In21
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Italian. Translated title: Preliminary observations on guayule as a rubber plant.
Cultivation tests were carried out with seed of Russian and U.S. origin. Average quantity of rubber received did not exceed 2% for the Russian and 3.75% for the U.S. type, compared with 7-10% yield in U.S.
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An abridgment of item no.145.
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Bibliography, pp.211-213.
Contents: Chap.1. Historical account; Chap.2. The environment:

Chap.3.Description of the guayule;Chap.4.Reproduction;Chap.5. Anatomy and histology;Chap.6.The resin-canals in the guayule; Chap.7.The origin and occurrence of rubber;Chap.8.Vegetative reproduction;Chap.9.The cultivation of guayule.

"First discovered by J.M.Bigelow,M.D.,in 1852,while attached to the Mexican Boundary Survey,'near Escondido Creek,Texas'. It was first described by Professor Asa Gray some years later... 1859...

"Public attention was drawn to guayule rubber,apparently for the first time in 1876,by an exhibition sent from Durango to the Centennial Exposition at Philadelphia...In the same year, according to the Mexican herald,the Natural History Society of Mexico took up the study of the plant."

Abstract in India Rubber World 45(1):20-21,illus. Oct. 1911. 305.8 In2; Pan Amer.Union Bul.34(2):177-195,illus. Feb.1912. 150.9 M76; Science,n.s.34(883):765-767. Dec.1, 1911[By J.E.Kirkwood] 470 Sci2; Chem.Abs.6(4):501. Feb.20, 1912. 381 Am33C

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Bibliographical footnotes.
Gives history and description of the plant and describes how the rubber is contained,the factory processes,the extent and future of the industry,and reproduction.
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Description of nine specimens received at the New York Botanical Garden,showing the processes of manufacture.
148. Lloyd,F.E. Methods of vegetative reproduction in guayule and mariola. Plant World 11(9):201-208,illus. Sept.1908. 450 P69
By seedlings and root-shoots("retonyos").
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Gives botanical description and describes germination,the root-shoots,and the place of the rubber in the plant.
150. Lloyd,F.E. Mode of occurrence of caoutchouc in the guayule, Parthenium argentatum Gray,and its function. Plant Physiol. 7(1):131-138,illus. Jan.1932. 450 P692
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"The account which I published in 1911(see item no.145)of the mode of occurrence of caoutchouc in guayule,..is incorrect... The purpose of the present paper is to set the matter right,so far as I now understand it.In the guayule,as in some other rubber-bearing plants,the rubber occurs in the parenchyma cells and is thus segregated.In contrast with this condition is that in the so-called latex-bearing rubber plants,such as Hevea... in

which the rubber is a constituent...of a white or colored milky fluid, which is stored in tubes from which, when opened, the fluid flows more or less freely...This general statement may now be extended to the guayule, for...the fluid here is equally a latex confined to individual cells."

Abstract in Biol.Abs.7(7):1553. Aug./Sept.1933. 442.8 B526

151. Lloyd, F.E. Notes on the acclimatization and cultivation of the guayule (*Parthenium argentatum* Gray). In Internatl. Rubber Cong., 4th, London, 1914. The rubber industry, being the official report of the fourth International rubber congress... [and] the principal papers read at the [3d] Rubber congress, New York [1912], pp. 384-389. London, International rubber and allied trades exhibition, ltd., [1914?]
Paper delivered at New York meeting. Describes experimental plantings in irrigated areas and naturally wet climates, showing that water-supply must be controlled. An abundance of water lessens the rubber content.
Reprint in India Rubber World 48(5):563-566, illus. Aug. 1913. 305.8 In2. Correction in 49(1):20. Oct. 1, 1913.
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Comparison of propagation by seed and by cuttings.
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Presented at annual meeting of the Botanical Society of America, Dec. 27-31, 1909, Boston, Mass.
Study of plants under irrigation at Cedros, Mexico, touching on rate of growth, anatomical changes, and amount of rubber secretion.
Abstract in U.S. Off. Expt. Stas. Expt. Sta. Rec. 23(2):130. Aug. 1910. 1 Ex6R
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"The purpose of this present writing is to give a summary in English of Dr. Ross' contribution (see item no. 216) to our knowledge of the plant...and in addition to record in brief form the views of the writer."

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Description and illustration of the Continental Rubber Company of New York's guayule exhibit, pp. 408-409.
157. Ludewig, H.J. Die kautschukkultur in Mexiko. Tropenpflanzer 14(10): 510-521. Oct. 1910. 26 T75
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Paper presented before the Division of Rubber Chemistry, American Chemical Society, at the 72d meeting, Phila., Pa., Sept. 5-11, 1926.
Discusses botanical considerations; characteristics of guayule shrub; rubber content; resin content; cultivation problems; germination of seeds; large-scale production of seedlings; maintenance of high rubber content.
Reprint in Rubber Age 20(3):129-132, illus. Nov. 10, 1926. 3058 R82
Abstract in Chem. Abs. 20(22):3841. Nov. 20, 1926. 381 Am33C
159. McCallum, W.B. The cultivation of guayule. India Rubber World 105(1): 33-36. Oct. 1941; 105(2):153-156, illus. Nov. 1941. 305.8 In2
Includes an historical account, general characteristics, problems of domestication, germination of seeds, production of plants for transplanting, production of high rubber content, problems of guayule growing in the United States.
"When considering the amount of land available in the United States on which guayule will grow well, it does not seem an impossible task, or even an essentially difficult one, to produce within our own borders 25% of our normal rubber needs. This would require, in general terms, 1,000,000 acres of land, 200,000 of which would be harvested and replanted each year... During a period of about ten years there have been established and maintained a series of 53 experimental stations of from one acre to five acres each, extending from southern Texas across to California, and up the coast region and the San Joaquin and Sacramento valleys to Red Bluff. These stations... were dispensed with only after the final results from each had been obtained. Thus... it is known fairly accurately just what guayule will do in the various regions. The greatest amount of available land is in southern Texas."
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Discusses importance of rubber to U.S., Intercontinental Rubber Company's successful introduction of guayule, cultivation and processing of the plant.
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Discusses the interests of the Madero brothers in Mexico and gives a picture of their *Compania Explotadora Coahuilense* factory at Parras.
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Includes guayule.
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Russian, with English summary. Translated title: Materials for the physiological characteristics of guayule.
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Discussion of guayule exports [and production], pp.6-7; tables giving exports of guayule rubber [quantity and value, by years 1935-1940, and by months, Sept. 1939-Aug. 1941] p.14.

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Description of agricultural and processing machinery used in growing guayule and producing rubber from it. Shows similarity of machinery to standard ore-treating machinery.
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Bibliographical footnotes.
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Article in Spanish.
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Abstract in *Chem. Abs.* 34(5):1514. Mar. 10, 1940. 381 Am33C;
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174. The Mexican guayule; the cultivation of this shrub rubber in Mexico continues with government encouragement... Amer. Chamber of Com. of Mex. Jour. 6(50):[8]-11. Apr. 1924.
"How the guayule grows on the plains of Mexico and is milled for the market; the cost of production and the price; machinery being used to plant and gather the shrub; report of the U.S. Department of Commerce upon the industry."
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Rubber factory being established at San Luis Potosí, Mexico, apparently based on Prampolini patent. "This composition is a substitute for India-rubber, and consists of gummy matter of the shrub called *Synantheroeas Mexicanas* by botanists, and by the Indians, 'yule', copalin', and 'jiguhite'."
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"One company, greatly interested in guayule, has spent more than a million dollars in an attempt to raise it scientifically on plantations in California, but its cost has remained too high - over 20 cents a pound - to compete with imported rubber. Still, encouraging progress has been made."
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Bibliographical footnotes.
Spanish. Translated title: Rubber substitutes and the guayule of Mexico. (Monograph published on the occasion of the inauguration of the first exhibit of Mexican products in Trieste, 1908)... Tr. by Prof. Mario Calvino.
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Plant opened by Intercontinental Rubber Company's subsidiary, American Rubber Producers, Inc., on Feb.6, 1931. "First time... that cultivated guayule has been harvested and milled on any commercial scale."
183. New guayule rubber process. India Rubber World 32(3):304. June 1905. 305.8 In2
Compañía Explotadora de Hulé formed in Mexico, to use Delafond extraction process. Article describes latter and also the process patented by Max Marx in England.
184. The new Mexican rubber. India Rubber World 24(3):264. June 1901. 305.8 In2
Quotations from report by U.S. consul at Matamoras, Mex., P. Merrill Griffith, on the plant known locally as "hulé," and called "Synantheroeas Mexicanas" in the Prampolini patent for rubber extraction. "This plant has not yet been identified botanically by any of the India Rubber World's correspondents... The plant... no doubt is the same which Mr. John H. Cheever, of the New York Belting and Packing Co., experimented with some twelve years ago." (See item no.107 for identification of plant as guayule.)

185. A new substitute for rubber. *Sci.Amer.* 82(20):309-310. May 19, 1900. 470 Sci25
"A shrub growing in central Mexico, and known to the Indians by a variety of names of which yule is one...It does not belong to the plants which yield milky juices, being a comparatively hard wood and growing as a small scrubby bush, but there is found within its bark and wood a large amount of gummy matter...The botanical name of this shrub is *Synathereoeas - Mexicanas*."
Article describes the method of extraction.
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Russian. Translated title: Cultivation of the rubber-bearing plants on the Black Sea shore.
. Includes guayule.
Abstract in U.S. Off. Expt. Stas. Expt. Sta. Rec. 60(5):444. Apr. 1929. 1 Ex6R
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Russian (Russian title, preceding English, omitted.)
189. Notes on sundry subjects. Prospects for guayule rubber. *India Rubber Jour.* (n.s.) 33(4):183. Feb. 25, 1907. 305.8 In21
Compania Explotadora de Caucho Mexicana has improved guayule, overcoming large percentage of resin and ash, presence of other impurities, and its intense smell.
190. Olsson-Seffer, Pehr. Rubber planting in Mexico and Central America. *Straits Settlements Bot. Gard. Agr. Bul. of the Straits and Fed. Malay States* (n.s.) 6(1):1-31. Jan. 1907. 22.5 St8
Guayule rubber, pp. 29-31.
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191. The one region where wild guayule is found. Rubber Age 20(3):126, map. Nov.10,1926. 305.8 R82
Gives names and locations of producing companies as shown on map.
192. O'Neil backs guayule. Tire Rev.41(11):42. Nov.1941. 305.8 In23
William O'Neil, president of General Tire and Rubber Co., is urging congressional action to underwrite guayule in the Southwest. Information from California has convinced him that in two years there can be sufficient production for the country. Guayule can be processed without change of machinery. Recent yield has been stated as high as 2,850 pounds per acre, with a cost of 15-19 cents a pound.
193. O'Neil, William. Guayule "rubber" as an emergency crop; suggested provision in the U.S.A. for "time of war". India Rubber Jour. 69(10):378. Mar.7,1925. 305.8 In21
Editor's comment, p.369.
194. Ordynskii, M.S. Uzlovye voprosy mekhanizatsii kauchukonosnykh kul'tur. Mechanisierung der Sozialistischen Landw. no.5, pp.16-24. May 1932; no.8, pp.14-18, illus. Aug.1932. 58.8 M46
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198. Patoni, Carlos. Algunos datos sobre el guayule... urgencia de su cultivo. Alianza Cient. Univ. Com. Region. del Estado de Durango [Mex.] Bol.3(5):193-209. Oct.31, 1912. 516 A14
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Discusses its name and history, rubber yield, need for cultivation, which type of cultivation suits guayule.

199. Patoni, Carlos. ...El guayule (*Parthenium argentatum* A. Gray); estudio del Ing. Carlos Patoni. 70pp., illus. Mexico, Departamento de talleres graficos de la Secretaría de fomento, 1916. 78 P27
Article in Spanish.
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Describes discovery and development, botany, where it grows, the available supply, reproduction and cultivation, extraction, the patent question, guayule in the rubber factory. Gives the trip in detail: Mexico reached, guayule factories at Saltillo, Parras and the Maderos, the industry at Torreon, and the visit to Gomez Palacio.
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Bibliographical footnotes.
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Partially reprinted in *India Rubber World* 58(4):579-581, illus., with editor's comment, p. 577. July 1918. 305.8 In2; *Internat'l. Rev. Sci. and Pract. Agr.* [Rome] 10(3):288-293. Mar. 1919. 241 In8; *Pan Amer. Union Bul.* 47(1):88-95, illus. July 1918. 150.9 M76; *India Rubber Jour.* 57(4):164. Jan. 25, 1919. 305.8 In21. More fully reprinted in *India Rubber World* 59(5):244-246. Feb. 1919; 59(6):289-291, illus. Mar. 1919; 60(1):347-348, illus. Apr. 1919. 305.8 In2. Abstract in *Chem. Abs.* 13(7):800. Apr. 10, 1919. 381 Am33C
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Two new and improved varieties of guayule developed: *Parthenium latifolium* and *P. augustifolium*.
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Table and text, giving statistics on Mexican production, 1905 to date, and possibilities of exhaustive exploitation of present wild guayule stand in Mexico.
209. Process of guayule extraction. *Internatl. Bur. Amer. Republics Bul.* 27(2):394-395. Aug. 1908. 150.9 M76
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Bibliographical footnotes.
German. Translated title: The anatomical structure of the Mexican

rubber plant "guayule".

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Bibliographical footnotes.
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Rep.Anderson makes plea to National Defense Advisory Commission.
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Bibliografie, p.447.
Article in French.
Description, habitat, history, and cultivation.
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Description of plant, where grown, and comparison of the rubber product with that from Hevea.
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Abstract in Biol.Abs.3(9/11):2007-2008. Sept./Nov. 1929. 442.8 B526

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Includes discussion of Dr. W. B. McCallum's work on propagation - machinery developed for all phases of the guayule industry.
(See also item #236)
225. Sauchelli, Vincent. Machine grown rubber in the United States - rubber growing by American farmers - plant-breeding and mechanical efficiency - America's answer to cheap coolie labor. India Rubber World 75(2):67-69, illus. Nov. 1926. 305.8 In2
"New varieties have been developed which are better yielders, which will be planted out, cultivated, and harvested by machinery. The areas capable of being utilized [are] in all parts of the cotton belt and even in other sections of the South.
"Three outstanding problems were solved: (1) The plant was made to reproduce by seed in a practical way on a large scale; (2) it was made to secrete sufficient rubber under conditions of forced growth; and (3) the successful transplanting to the field, under control from nurseries."
Partially reprinted in Mex. Com. and Indus. 9(1):9-11. Jan. 1927. 287 Am3Mj
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Review of 1910 boom year: position in 1910, occurrence and harvesting, preparation of rubber, how the future was regarded in the past, and capitol investment.
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Experts have impressed upon Congress that guayule is best bet. Though California would take the lead in growing this rubber substitute, Texas, New Mexico, and Arizona would also grow it. In Texas, Brewster, Presidio, and Pecos counties should be good localities. Illustrations of machinery used in harvesting. Gross returns, \$75 per acre with rubber at 23 cents a pound. Measure before Congress provides for planting 45,000 acres.
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Bibliografia, p. [54].
Italian. Translated title: Guayule; research and observations on the plants, Parthenium argentatum, acclimatized in the Royal

Colonial Garden(Palermo,Italy).

Gives history,dimensions of the various parts of the plant, analysis of the plant,rubber and resin content,and discussion of guayule resin.

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Abstract also appears in Sci.News Letter 18(501):318. Nov.15, 1930. 470 Sci24
231. Spence,D[avid]. The bacterial decompositon of the rubber in the latex of hevea in relation to the question of the function of the rubber in the living plant...and address delivered in Manchester before a joint meeting of the Society of Chemical Industry and the Institution of the Rubber Industry on July 24,1935. Res.Assoc. Brit.Rubber Mfrs.Inform.Bur.Jour.4(8):87-91. Aug.1935.
"A monthly record was...maintained over a period of years of the changes occurring in the total rubber in these[guayule]plants ...The results of this work[show that]notwithstanding the diversified methods of investigation employed,every one of our tests demonstrated that the rubber was actually used by the guayule plant to a greater or less extent to meet its requirements in its response to the stimulus of new growth."
Abstract in Soc.Chem.Indus.Jour.Chem.and Indus.54(34):766. Aug.23,1935. 382 M31C; Chem.Abs.30(1):323. Jan.10, 1936. 381 Am33C
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Paper presented before the Division of Rubber Chemistry, American Chemical Society,at the 72d meeting,Phila.,Pa.,Sept. 5-11,1926.
Discusses rubber content of guayule shrub,separation of rubber from shrub,shrub deterioration in storage,experiments on shrub preservation and stabilization,and the status of the guayule rubber industry.
Reprint in Rubber Age 20(3):133-135,illus. Nov.10,1926.
Abstract in India Rubber and Tire Rev.26(9):34-35,39-40. Sept. 1926. 305.8 In23; Chem.Abs.20(22):3841-3842. Nov.20, 1926. 381 Am33C
233. Spence,D[avid] Cultivation and preparation of rubber in the United States. Indus.and Engin.Chem.22(4):384-387,illus. Apr.1930. 381 J825
Address before California section of American Chemical Society,San Francisco,Calif.,Dec.13,1929.
"A solution of the important problem of finding a source of rubber in this country has been undertaken in California[by the Intercontinental Rubber Co.]in the cultivation and extraction of rubber from the Mexican guayule plant.This undertaking was begun about eighteen years ago and the experimentation has now reached the stage where a factory for the commercial extraction

of the rubber from this plant is in sight. The problem of rubber cultivation in the United States has been studied from various angles - botanical, chemical, agricultural, mechanical, and economic - and a brief outline of what has been accomplished along these lines is given."

Partially reprinted in India Rubber Jour. 79(18):636, 638. May 3, 1930. 305.8 In21. Abstract in Soc. Chem. Indus. Jour. Brit. Chem. Abs. B, June 13, 1930, p. 520. 382 M31; Biol. Abs. 5(11):2904. Nov. 1931. 442.8 B526; Chem. Abs. 24(11):2914. June 10, 1930. 381 Am33c

234. Spence, D[avid] and Caldwell, M. L. Determination of rubber in rubber-bearing plants. Indus. and Engin. Chem. Analyt. Ed. 5(6):371-375. Nov. 15, 1933. 381 J625A

"Literature cited, "p. 375.

"The work... was undertaken as an essential step towards the solution of some of the complex problems in the production of rubber from the guayule shrub... The authors method, while primarily developed for the analysis of guayule, has been applied with success to the investigation of other rubber-producing plants."

Partially reprinted in India Rubber World 90(1):45-46. Apr. 1934. 305.8 In2. Abstract in Chem. Abs. 28(1):365-366. Jan. 10, 1934. 381 Am33C

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"The experimental study... of this report was undertaken on guayule plants... [and] carried out in the laboratories of the American Rubber Producers at Salinas and at the Chemistry Department of Stanford University."

Abstract in Chem. Abs. 29(22):8393-8394. Nov. 20, 1935. 381 Am33e

236. Spence, David. Recent scientific advances in connection with guayule; further research has established the important fact that the rubber in guayule shrub does not exist in the cells in form in which it is recovered, but as a colloidal suspension in the plant juice. Rubber Age 23(3):133-134, illus. May 10, 1928. 305.8 R82

"Comprises the greater part of a paper read before a meeting of the N.Y. group, Rubber Division, American Chemical Society, Apr. 25, 1928."

Abstract in Chem. Abs. 22(13):2492-2493. July 10, 1928. 381 Am33C
(See also item no. 224)

237. Spence, D[avid] and Boone, C. E. Some vulcanization tests of guayule rubber. [U.S.] Natl. Bur. Standards Technol. Paper no. 353. 3pp. Washington, 1927. 157.88 T22, v. 22

"This paper gives the results of some physical tests of guayule rubber grown in both Mexico and California. The samples of guayule rubber were obtained from shrub which had been harvested and treated, the rubber being forwarded to the Bureau of Standards. Figures are given showing the properties of different types of guayule rubber and several compounds made with standard plantation

crêpes.

"Tests were made using 'pure gum', zinc oxide, and gas-black formulas and also in formulas where one-half the guayule rubber was replaced with plantation crêpe. Some data are given on the aging properties of compounds based on eight months' exposure to the weather protected from sunlight.

"The results indicate, that properly prepared, guayule rubber will compare favorably with plantation Hevea rubber."

Partially reprinted under title "Guayule rubber has commercial utility comparable with plantation crepe," in *India Rubber and Tire Rev.* 27(11):26, 26. Nov. 1927. 305.8 In23. Abstract in *Rubber Age* 22(3):169. Nov. 10, 1927. 305.8 R82; *Soc. Chem. Indus. Jour. Brit. Chem. Abs. B*, Apr. 13, 1928, p. 276. 382 M31; *Chem. Abs.* 22(2):333. Jan. 20, 1928. 381 Am33C

238. Studi ed esperienze sulla coltura delle piante da gomma elastica in Sicilia. Palermo R. Orto Bot. Bol. 5(3/4):132-137. Dec. 31, 1906. 451 P17

Italian. Translated title: Studies and experiments in the cultivation of india-rubber plants in Sicily.

Part I. Il "guayule" (*Parthenium argentatum*, A. Gray), pp. 132-135.

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"It is undoubtedly the presence of a large quantity of resinous matter associated with the rubber that enables the extractives to collect together as the wood is ground under water... Is there not a hint in this for the collection of the rubber contents of the milkweed?"

Abstract in *Chem. Abs.* 3(24):3012. Dec. 20, 1909. 381 Am33C

240. Tavernetti, A. A. Monterey County experiments with rubber plant. *Calif. Cult.* 67(16):420. Oct. 16, 1926. 6 C12

"After many years a strain of the guayule has been perfected which will grow and produce rubber profitably on certain soils in the coastal valleys of California. One of the first commercial acreages to be planted in California has been made by the Rubber Exploration Co. near Salinas, where several hundred acres of guayule are now growing."

241. Taylor, F. J. Uncle Sam's rubber farmer; through Dr. William B. McCallum's work, 40,000 farmers, each with 100 acres of guayule, could make us independent of foreign rubber sources. *Country Gent.* 111(6):16, 57-58, illus. June 1941. 6 C333

Describes his work with the Intercontinental Rubber Company. "In improved varieties now undergoing selection, the rubber content runs up to 25 per cent."

242. Terry, H. L. India rubber and its manufacture. 287 pp., illus. London, Archibald Constable & Co., Ltd., 1907. 305 T27

Guayule, pp. 55-56 of chapter on production of raw india-rubber. Includes an analysis by the author of a sample of the rubber.

243. Thone, F. Guayule rubber. Science 95(2456):sup.p.9. Jan. 23, 1942. 470 Sci2
Describes advantage of resin containing guayule, over resin-free synthetic rubber, for processing in machinery made for hevea rubber, which has about 5 per cent resin.
244. [Thornber, J.J.] Work with guayule. Ariz. Agr. Expt. Sta. Ann. Rpt. (1911/12) 23:673-674. 1912. 100 Ar4
300 rooted plants set out in March 1911, and irrigated, showed encouraging growth until eaten back by jackrabbits. A second lot, seedlings, made fair growth.
Abstract in U.S. Off. Expt. Stas. Expt. Sta. Rec. 29(5):443. Oct. 1913. 1 Ex6R
245. Tower, Reginald. Guayule rubber. Kew Roy. Bot. Gard. Bul. Misc. Inform. no. 6, pp. 255-256. 1908. 451 K51B
Dispatch from H.M. Minister to Mexico to the Secretary of State for Foreign Affairs. Quotes an American expert who claims that only about 400,000 tons of guayule are in existence, either standing in the soil, at the plants, or in transit. Because of the slow-growing habits of the shrub, it is predicted the industry will go into decay.
246. Treadwell, J.C. Guayule rubber from Texas; factory at Marathon has taken full advantage of only guayule district on American side of the Rio Grande. Rubber Age 20(3):139-140, illus. Nov. 10, 1926. 305.8 R82
Border Rubber Co. plant was built in 1907, operated until 1916, remained dormant until 1925, rehabilitated and operated continuously until September 1926, when operations were suspended pending recovery in price and demand for the product. Includes description of plant operations.
247. U.S. Department of agriculture. Office of information. ... Federal scientists speed rubber plant experiments. U.S. Dept. Agr. Off. Inform. for the Press, Sept. 10, 1934. 5pp., processed. [Washington, 1934]
"Experiments by the U.S. Department of Agriculture... have singled out as the most promising sources for domestic rubber: goldenrod, guayule... and hevea."
Reprint, with slight changes, in Rubber Age 36(1):23-24. Oct. 1934. 305.8 R82. Partially reprinted in Automotive Indus. 71(13):377. Sept. 29, 1934; Science (n.s.) 80(2073):261-262. Sept. 21, 1934. 470 Sci2; Sci. Amer. 152(2):79, illus. Feb. 1935. 470 Sci25
248. U.S. Congress. House. ... A bill to provide for the planting of forty-five thousand acres of guayule in order to make available a domestic source of crude rubber for emergency and defense uses. U.S. Cong., 77th, 1st Sess., H.R. 5030. 6pp. [Washington, U.S. Govt. print. off., 1941.]
Introduced by Mr. Anderson of California, June 11, 1941, and referred to Committee on agriculture.

249. U.S. Congress. House. ...A bill to provide for the planting of forty-five thousand acres of guayule in order to make available a domestic source of crude rubber for emergency and defense uses. U.S. Cong., 77th, 1st Sess., H.R. 6262. 5pp. [Washington, U.S. Govt. print. off., 1941]
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