

HISTORY OF THE AMERICAN MARCONI COMPANY

Thorn Mayes, W6AX

The American Marconi Wireless Telegraph Company was the first wireless company to be formed in the United States. When it was incorporated in 1899, Marconi had received signals a distance of 30 miles. When Radio Corporation of America took over American Marconi just 20 years later, wireless was a worldwide communications media. Of the many wireless companies formed over this period, only the American Marconi lived for the entire time and for the last seven years had a virtual monopoly of wireless communications in this country.

Why was American Marconi so successful where many others had failed and why after gaining practically the entire business, did it go out of existence in 1919? A review of its history will give answers to these and other questions.

Material for this history up to 1912 came from many books and magazines. Starting in 1912, "Wireless Age" published by American Marconi provided much data but this history was made possible by information and help from Bob Palmer, W7RD. Others who were most helpful were Lloyd Espenschied, Gerald Tyne, Ed Raser, W2ZI, L. M. Clement, K3AA, Bruce Kelley, W2ICE, Commander Richard Johnstone, K6FZ, and Warren Green, W7JY.

July, 1897, Marconi formed the Wireless Telegraph and Signaling Company in England for the purpose of building and installing wireless on lightships and in lighthouses along the English coast for by then he had demonstrated that he could work over a distance of 15 miles which was sufficient for this duty.

In the fall of 1899, he brought equipment to New York to report the American Cup yacht races. By this time he felt so sure that he could span the Atlantic, with a more powerful transmitter, that he formed the American Marconi Wireless Telegraph Company

under the laws of New Jersey, with an authorized stock of two million shares, five dollar par value. 600,000 shares went to Marconi with 350,000 held by the English company. The company was formed for the purpose of using Marconi patents in the United States.

Early in 1900 the name of the English company was changed to the Marconi Wireless Telegraph Company and in July, Marconi decided to build his transatlantic station at Poldhu, England. Dr. J. A. Fleming was given the job of designing the transmitter which was to be one hundred times more powerful than any used so far, an input of 25 kilowatts. R. N. Vvyvan was in charge of installation.

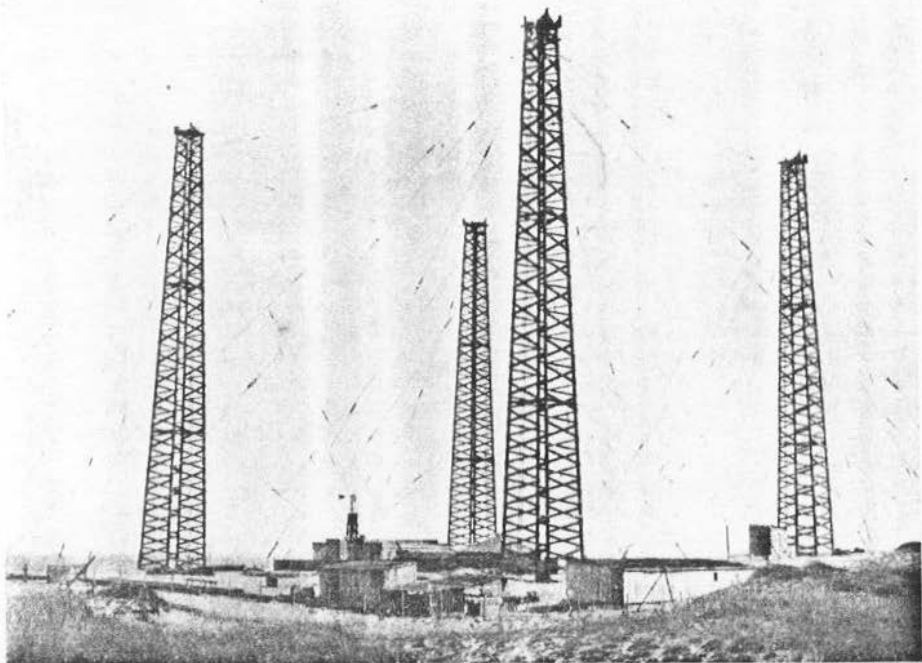
Marconi specified an inverted cone antenna of 200 vertical wires supported by a ring of 20 masts 200 feet high.

South Wellfleet on Cape Cod was selected as the location for the station to receive the Poldhu signals and Vvyvan was sent there to build a duplicate of the Poldhu station.

A gale in September destroyed the Poldhu antenna which was replaced with a fan design, two 150 foot high masts located 150 feet apart supporting a messenger cable which carried 50 wires spaced three feet apart.

Marconi now realized his circular antenna was weak structurally so decided to go to St. Johns, Newfoundland with his receiving gear and use a kite supported wire. This location was almost 1000 miles closer to Poldhu than South Wellfleet. It was a wise decision for the day before the party sailed for St. Johns, Vvyvan cabled that the South Wellfleet antenna had been destroyed in a storm.

Marconi, Kemp and Padget arrived at St. Johns December 6th. They soon settled on a site in an abandoned Army building located on a hill overlooking the city. The distance to Poldhu was 2000 miles and the greatest distance they had covered so far was 225 miles



MARCONI STATION "CC", "MCC", "WCC", South Wellfleet, Mass.

but Marconi was confident the test would be a success. They were delayed by a severe winter storm but Thursday the 12th they succeeded in getting a kite up 400 feet that was fairly stable with its 400 feet of antenna wire. The lead was connected to the instruments about the time Poldhu was to start sending that day. Marconi put the receiver to his ear then handed it to Kemp asking if he heard anything. Kemp stated that he heard the pre-arranged signal of three dots several times, Marconi confirmed that he had also.

Their experiment was a success, wireless waves had spanned the Atlantic! The New York Times of December 15, 1901 printed, "Wireless Signals across the Atlantic, Marconi says he received them from Poldhu, England."

The first equipments installed by the American Marconi Company were made in mid-1901 on the Nantucket Light Ship and a shore station at Siasconset on the east coast on Nantucket Island. The sets consisted of

battery powered 10 inch spark coils and coherer receivers. First messages were exchanged between these stations, which were 40 miles apart, August 12, 1901. Siasconset first gained fame when it reported the collision of the ships Republic and Florida in dense fog off Nantucket Island, January 23, 1909 with Jack Binns the operator on the Republic.

During 1902, duplicate antenna systems were built at South Wellfleet, Poldhu and Glace Bay, Canada. They were inverted cones of 200 wires each, supported by four lattice towers 215 feet high. Tests were carried on between these three stations for several years.

While in New York in 1899, Marconi met a prominent lawyer, John Bottomly who was interested in wireless. When the company was reorganized in 1902, Bottomly became General Manager, Secretary and Treasurer. He held the General's position until it was taken over by E. J. Nally in 1913 and continued as Secretary-Treasurer thru

1918. Bottomly's broad experience and good judgment were responsible for carrying the company thru the trying times of 1913. The Annual Report for 1910 states that the company had lost money each year.

David Sarnoff was hired as office boy in September 1906. Later he stated that when he arrived, the company was operating four land stations and had their equipments on four ships with a total of less than 25 employees.

American Marconi used British designed gear until 1910 when they started to originate their own parts arrangements but as they had no manufacturing facilities, most of the parts came from England.

The early transmitters used a ten inch spark coil connected to antenna and ground across a spark gap. Starting in 1901, a high voltage condenser was added across the spark gap and in 1904 a tuning helix to tune to the desired wavelength.

Until 1904 the coherer was the standard detector as the Marconi magnetic detector developed in 1902 was not used in the United States until 1904. Some early stations had the transmitting helix connected so it could be used for both transmitting and receiving, others had tapped loading coils to tune the receiving circuit. Multiple tuners were not available until 1909.

John W. Griggs former Governor of New Jersey and Attorney General under McKinley, became President of American Marconi in 1905, a position he held until the company was taken over by R. C. A. in 1919. Fredrick Sammis became Chief Engineer in 1908. He was not a creative engineer so little development was done until American Marconi took over the excellent engineering group from United Wireless in 1912.

Marconi had an American patent on the non-synchronous rotary gap and Fessenden had the patent on the synchronous gap. The two companies made an agreement in 1912 and immediately American Marconi began to use rotary gaps.

As there had been flagrant infringements of the Marconi wireless patents, the Marconi Company in 1910 initiated

several suits. The decision reached in the famous case, Marconi Wireless Telegraph Company vs British Radio Telephone and Telegraph Company, handed down in December 1910 by Lord Justice Parker, was used as the basis for settling many other worldwide similar court actions.

The Marconi Company claimed the defendant's use of autotransformers for connecting to the aerial and ground circuit was an infringement of their patent number 7,777. Lord Justice Parker after hearing a number of technical witnesses, stated that he felt the Marconi patent was being infringed.

A suit had been filed against the United Wireless Company and the English decision was applied in this case. The following notice from the April, 1912 issue of Modern Electrics give the result:

"As a result of a merger which has been brought about between the Marconi Wireless Telegraph Company and the United Wireless Telegraph Company, when the suit of the former company against the latter company for alleged infringement of patent rights came up in the United States District Court on March 25th 1912, the United Wireless Company entered no defense and consented to the granting of a decree in favor of the Marconi Company."

"As a further result of the merger, all stations and contracts of the United Wireless Company will be taken over by Marconi. This involves about 500 ship and land stations in the United States."

The Marconi Company purchased the assets of United for \$700,000 and sold them to the American Marconi Company.

United actually delivered to American Marconi 50 land stations, as 20 stations that were not profitable had been closed, and 400 marine sets as 100 had been removed from ships not paying their rentals. American Marconi at this time had 5 land stations and 40 marine installations so their total was now 500.

By 1908, 1500 KW spark transmitters had been installed at Glace Bay and the Clifden, Ireland stations and point-to-point communication between them was dependable for at least 20 hours per day. The 35 KW set at South Wellfleet

was too weak for transatlantic work so was used as a relay station to Glace Bay for European messages and for marine traffic.

Wireless was rapidly developing into a major business and almost overnight, the American Marconi Company changed from a relatively small company with little more than ten percent of the communications business in the United States to a virtual monopoly.

The efficient United Engineering Department under Harry Shoemaker as Chief Engineer, that came over to American Marconi, had their work cut out for them as new regulations which went into effect in 1912 required extensive changes in every land and ship station. Shoemaker was made Chief Development Engineer with the immediate charge to make the design changes necessary to meet the new specifications.

These changes included—

1 - Add 10 inch spark coil sets on all ships for emergency operation.

2 - Add secondary to tuning helix to give inductive coupling with sharper wave.

3 - Add transmitter loading coils to get to 600 meters as most of the United operation had been on 450 meters.

4 - Add provision for operating on 300 meters.

5 - To meet the new decrement requirements, better contact had to be made with the Leyden jars and in many cases, a rotary gap had to be substituted for the straight gap.

In 1913 the type "A" tuning helix was developed which had a secondary coil that could be tipped to reduce the output of the set. This design met the regulation of reduced power when within five miles of a Government station as well as giving a sharper wave. All United jar racks were made of wood with the jars sitting on metal plates resulting in a poor contact so a complete new line of cast iron and aluminum racks were introduced in 1913.

Wireless Age for March 1913 carried this item, "More than 800 Wireless Equipments in three months. Sets have been installed on 40 trading vessels. 250 ships have been equipped with auxiliary sets. 413 ships have been refitted with tuning apparatus as well as 50 shore stations. These were nec-

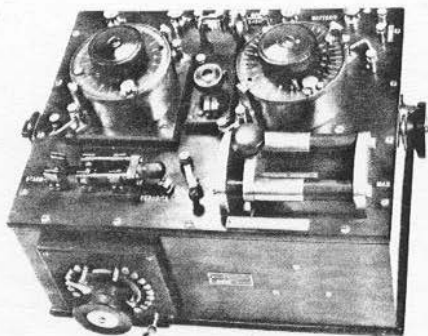


Fig. 1 American Marconi #103 Tuner
300 to 900 meters

essary to fulfill the requirements of the existing wireless laws."

The Annual Report for 1912 contained the following material:

"A two percent dividend was declared on American Marconi stock, the first paid by any American wireless company based on earnings.

American Marconi now has their equipments on over 450 ships of the American Merchant Marine, which with 50 shore stations give a total of over 500.

High power stations in Belmar New Jersey and Wales for transatlantic operation should be completed by year end. Transpacific stations in San Francisco and Honolulu are well along in construction and negotiations are in progress for stations to operate between New York and Stavanger, Norway.

The company acquired land, built and equipped a 20,000 square foot factory in Aldene, New Jersey, near Roselle Park, for producing wireless equipment for our needs and for sale."

Marconi policy had been to lease sets rather than sell but David Sarnoff had by now reached a position of authority in the company and he realized the importance of producing gear to sell to the Navy and other users. With the Aldene factory in production they, for the first time had the capacity to produce for sale so the Navy was advised of this change in policy and Navy orders were soon received.

After completing the design changes necessary to bring United and Marconi transmitter performance in agreement with the new laws, Shoemaker tackled

the urgent job of developing more sensitive and selective receivers.

From 1912 to 1919, the company developed a total of 21 receivers number 101 to 121 but only the main production sets will be covered here.

The first of these improved receivers, the 101 was built in 1913 for use in major land stations equipped with 5 KW transmitters. It covered the range of 200-7500 meters. The design was copied from the United E tuner but with the loose coupler behind the panel with all controls coming to the panel front. Approximately 25 sets were produced.

Also in 1913 the number 103, figure 1, was produced primarily for marine use. It was similar to the British Marconi Valve Tuner and was assembled from English built components. Instead of the Fleming Valve, it used a carborundum detector with provision for using Cerucite crystal that had just been developed by American Marconi, that was as sensitive as Galena but more stable, tuning range was 300-900 meters.

The United marine receivers were mostly United D tuners which with the looped antenna connection covered 200-2000 meters. These were reconnected to use aerial and ground which increased their coverage to 3,000 meters. Some of the D tuners were still in use until World War I.

The following items are from the Annual Report of 1913—

"Number of messages handled increased from 228,000 in 1912 to 379,000 in 1913.

The high power station at Belmar, New Jersey has been delayed in completion but will be in operation in four to six weeks, the California and Hawaii stations soon after.

Cape Cod, not New York, was selected as the western terminus of the Norwegian circuit, Stavanger the eastern.

Alaska communications are now handled by the United States Government and rates are high. The decision has been made to build several high power stations in Alaska to work directly with Seattle and Astoria.

The dividend for the year was passed due to heavy non-recurring expenses:

A - Dismantling ship and shore stations

from United that are not now needed.

B - Cost of changes necessary to upgrade shipboard and shore transmitters to meet new Government specifications.

The United States Ship Act of 1912 requires all ships carrying 50 or more people to be equipped with wireless capable of communicating over 100 miles, with a trained operator to manage the set. This has appreciably increased the number of shipboard installations, the need for more sets, and trained operators. Your company immediately set up a training school in New York City for producing new operators and retraining old ones."

Late in 1914 the P-4 panel type transmitter, 2 KW-500 cycle with quenched and synchronous gap was developed. All controls for tuning and wave changing were brought out to the front panel. Bob Palmer says this was the first really good American Marconi set from the standpoint of ease of operation, performance, and compactness.

Early in 1915 the 106 receiver, figure 2, went into production as an improvement over the 101 and fitted into a smaller cabinet. It was designed primarily for marine use with a tuning range of 200-3500 meters. Soon afterward, the P-4 was superseded by the P-8, figure 3, with minor changes.

The P-8 transmitter with the various models of the 106 receiver became the standard marine equipments and were produced in quantities for all types of ships during World War I. After R. C. A. was formed, General Electric took the tools and dies from Aldene to Schenectady and continued to build both units until the end of the spark era. Although originally built with crystal detectors the 106 was later modified to use tube detector.

In mid 1915, Roy Weagant replaced Fredrick Sammis as Chief Engineer.

WAR DECLARED APRIL 6, 1917.

All commercial and amateur wireless stations were closed or came under Navy control on April 7. The Navy took over 53 coastal stations from American Marconi and immediately closed 28. Of their 540 ship sets, 370 were on ocean going vessels so were taken by the Navy. Approximate-

ly 170 installations on small coastwise vessels and tugs were left with the Marconi Company.

No commercial traffic was permitted except thru stations controlled by the military except in Alaska. The Bolinas California-Kahuku Hawaii circuit was operated by the Navy, also the Marion, Massachusetts and New Brunswick, New Jersey stations. Chatham was discontinued October, 1918 and Belmar, New Jersey, February, 1919 as a more efficient transatlantic receiving station had been built at Bar Harbor, Maine.

American Marconi was out of business from an operating standpoint but a great need existed for wireless gear for the war effort. The Aldene plant from May thru August 1917 was increased by 40,000 square feet and employment jumped from 200 to 700 employees.

The first large contract was for 400 type CM296A-1/2 KW-500 cycle spark transmitters for submarines at 2,500 dollars each, a million dollar contract. Orders for several hundred 2 and 5 KW transmitters for use on battleships and destroyers soon followed.

A 1 KW set was developed for the Navy, built on a two-piece panel, radio frequency section on top, power supply on the bottom. Hundreds of these sets, modified so they could be separated into two units were built for the Army and foreign governments as field sets carried on carts. A small portable 1/2 KW-900 cycle set was built in large quantities for use by landing parties.

Near the end of the war, they developed their only tube set, the SE-1100, a 200 watt unit designed for seaplane use. Using two General Electric 250 watt tubes, it had a range of 60 miles by phone, 150 miles on CW or ICW.

Equipment sales amounted to five million dollars in 1917, seven million in 1918. Wireless Age for January, 1918 gives the following yearly income for American Marconi. 1914-150 thousand; 1915-177 thousand; 1916-260 thousand and 1917-609 thousand dollars. The company paid a five percent dividend for 1917.

**ARMISTICE SIGNED
NOVEMBER 11, 1918**

Of the 370 ships taken over by the

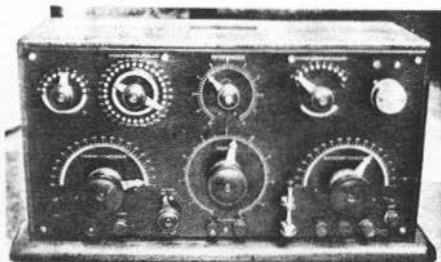


Fig. 2 American Marconi #106 Tuner
200 to 3500 meters

Navy in April 1917, 40 had been sunk by November 1918.

Special Order number 73 of December 3, 1918 addressed to all officers in charge of American Marconi Telegraphs, stated—

"The American Marconi Wireless Telegraph Company has sold to the United States Navy Department all of its coastal stations as listed below-45 in number. This company has also sold to the United States Navy Department its wireless apparatus on ship stations as listed- a total of 330. The sale of the above named ship and coastal stations is effective November 30, 1918. After this date, the United States Navy Department will own and operate the stations above mentioned and will furnish and employ the necessary personnel." Signed David Sarnoff, Commercial Manager American Marconi Company.

The company was paid \$789,500 for the above stations.

The American Marconi Company was left with its three high power stations Bolinas, Marion and New Brunswick, all being operated by the Navy, plus equipments on 170 small ships and its plant at Aldene, New Jersey.

Wireless Age for February, 1919 carries the following item:—

"The War Trade Board has lifted the ban on the use of radio by commercial vessels in the Pacific and Atlantic Oceans west of the 40th meridian. This restores the use of radio to conditions existing before the war."

Bob Palmer says that pre-war, many ship owners were not happy with leasing their wireless sets from American Marconi but they had trouble

getting service from the Navy during the war period so when restrictions were removed, they requested American Marconi sets instead of the Navy units. He says that 1919 was a hectic year for Marconi in trying to keep up with this demand. Approximately 150 vessels during that year had their Navy sets replaced with Marconi units and in many cases Navy-owned P-8 transmitters were removed and a Marconi P-8 transmitter reinstalled.

The President on July 11, 1919 approved the return of radio stations to their former owners effective March 1, 1920. Most of the land stations were never returned as many were no longer needed and by that time the commercial companies had built new modern stations. Most of the shipboard sets had been converted so the Navy scrapped the majority of the stations that were taken over at the start of the war.

Because of the importance of wireless in the war, it was generally felt that the United States commercial communication system should be owned by an American company. American Marconi had not pushed the sale of its stock in the United States so a majority was foreign owned, a large block by the parent company. This fact caused bitter feelings against the company.

The Marconi timed spark 300 KW stations were now obsolete as the arcs of much lower power outperformed them. During the war, a 200 KW Alexanderson alternator developed by General Electric was installed by the Navy in the New Brunswick station. It outperformed the 500 KW arcs and was the most powerful station in the world. Marconi had gone to Schenectady to see the alternator. He had witnessed its performance at New Brunswick and wanted exclusive rights to their use after the war. This move the Navy intended to block.

Wireless Age of November, 1919 carried an article on the proposed formation of R. C. A. which included a memo to the American Marconi stockholders from John W. Griggs president since 1905. This memo in part follows. It explains company objectives and why it should be merged into R. C. A.

"The principal aim and purpose of the Marconi Wireless Telegraph Company of America during all the period of its existence, has been the establishment and maintenance of transoceanic communication. Although the company has done no inconsiderable business in minor branches of the Wireless art, such as the equipping of vessels, the operation of ship to shore traffic, the collection of royalties, and the manufacture of wireless apparatus, yet these by the management have always been considered as incidental to the greater and more profitable business of long distance communication.

We have found that there exists on the part of the officials of our government a very strong and irrevocable objection to your company because of the stock interest held by the British Company. Consequently your company has found itself greatly embarrassed in carrying out plans for an extensive transoceanic traffic, and unless the British Marconi interest in your company is eliminated, your President and Board of Directors believe it will not be possible to proceed with success on the resumption of its preparations for a world wide service when its stations shall be returned to it, as they will be in the near future.

In a word, we are satisfied and convinced that in order to retain for your company the proper support and good will of our own government it is necessary that all participation in its stock, as well as in its operations on the part of any foreign wireless company must be eliminated.

Having these considerations in mind, your officers have lately undertaken to remove the objections of the government and to do away with the threatened embarrassment of which we have spoken.

Certain long distance and other radio devices and systems have been developed by General Electric Company. Some of these devices and systems promise to be of great value in transoceanic radio communication.

A corporation has been formed called the Radio Corporation of America which has entered into an agreement with General Electric concerning pres-

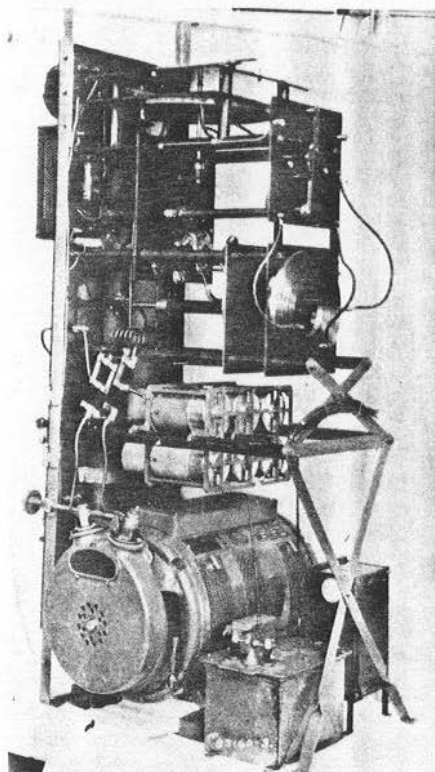


Fig. 3 American Marconi P-8 Panel Transmitter, 2 KW 500 cycle, 300-450-600 meters.

ent and future patent rights, the manufacture of patented apparatus and devices exclusively by General Electric for R. C. A. and the exclusive right of R. C. A. to sell patented radio apparatus of General Electric.

General Electric has appropriated two and a half million dollars, a portion of which is to be used by G. E. under an agreement satisfactory to your Directors in the purchasing of the shares of stock in your company now owned and held by Marconi Wireless Telegraph Company of Great Britain.

Each stockholder of Marconi Wireless Telegraph Company of America will have the privilege of exchanging his stock in the company for an equal amount, par for par, of the preferred stock of R. C. A. and in addition shares of common stock of the new company

equal in number, to the shares held in the present company."

A shareholders meeting of the American Marconi Company was held November 20, 1919 at which time the proposed agreements were passed and a five percent dividend was declared.

Beside its operating organization, Aldene plant, patents, etc. American Marconi transferred to R. C. A. ownership of its three high power land stations and installations on approximately 350 ships.

Wireless Age of May 1920 carried this note—"Stockholders of the American Marconi met April 6th and voted to dissolve the company. This concludes the plan whereby the assets of American Marconi Wireless Telegraph Company are to be taken over by R. C. A."

DEFOREST

Interest in old time movies is increasing with release of many old time favorites. In a large group being brought back to the public by producer Maurcie Zouary is a series of shorts made by Dr. Lee DeForest between 1919 and 1924 using sound-on-film optical process. These rare films feature such vaudeville headliners as Eddie Cantor, Fanny Ward, Weber and Fields, Chic Sale, Phil Baker and others.

Zouary announced that he'll write a book about DeForest under whose supervision the talking pictures were developed.

(Jack Johnson)

---NOTICE---

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