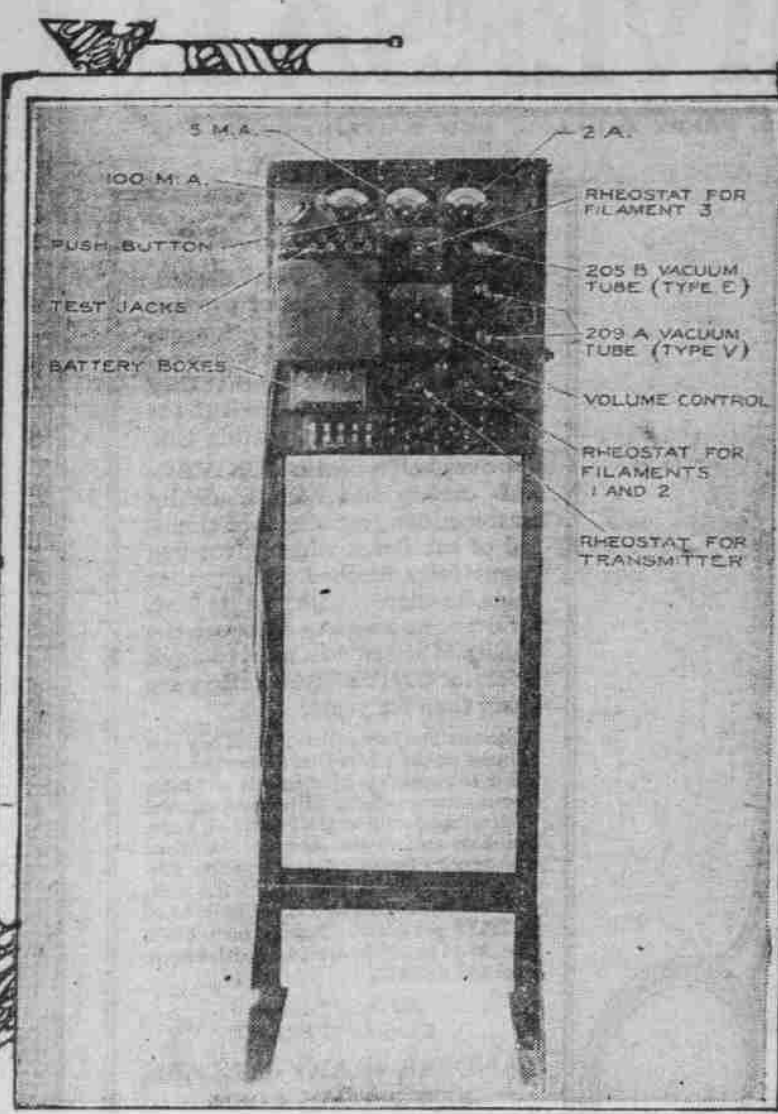
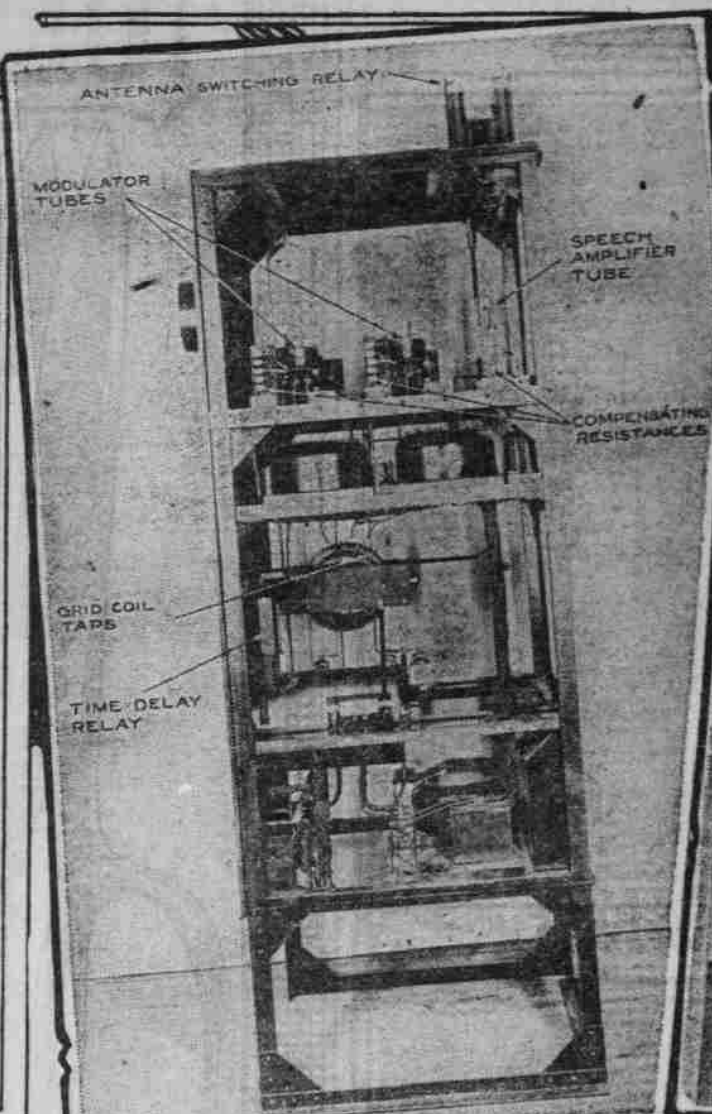


# THE OREGONIAN WILL INSTALL ALL GIGANTIC RADIO PLANT

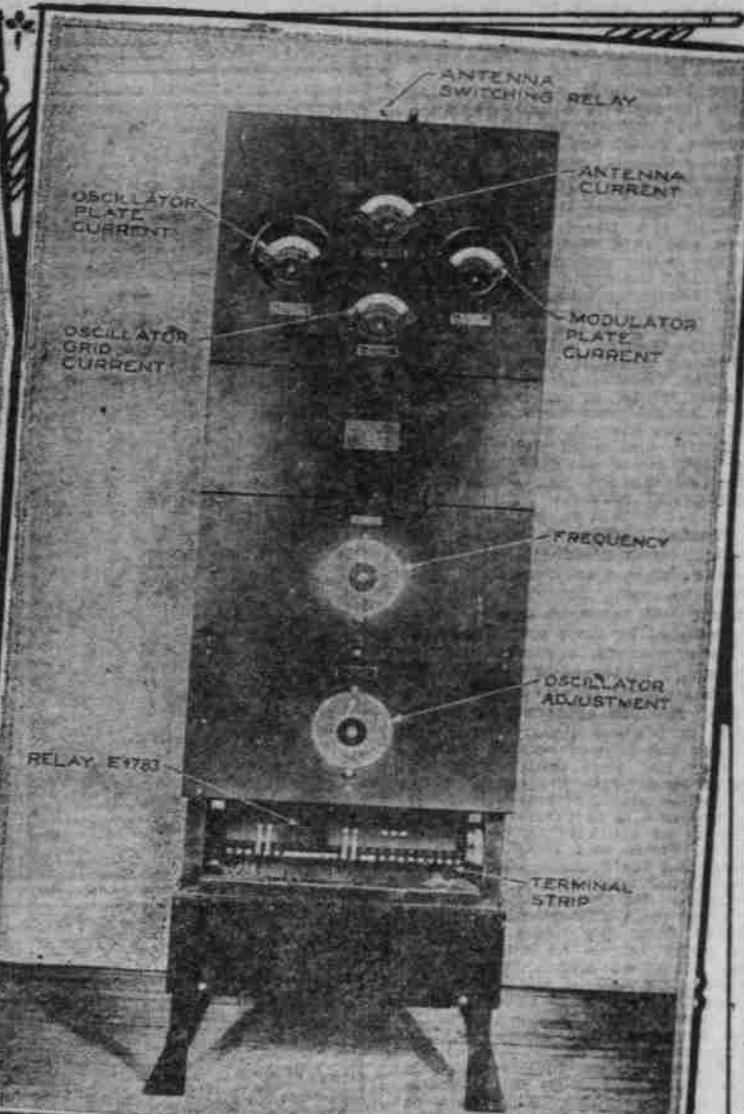
Powerful Broadcasting Set Designed to Cover Radius of About 1500 Miles Will Keep Persons on Land and Sea in Touch With World Events and Also Provide Entertainment for Thousands of Fans.



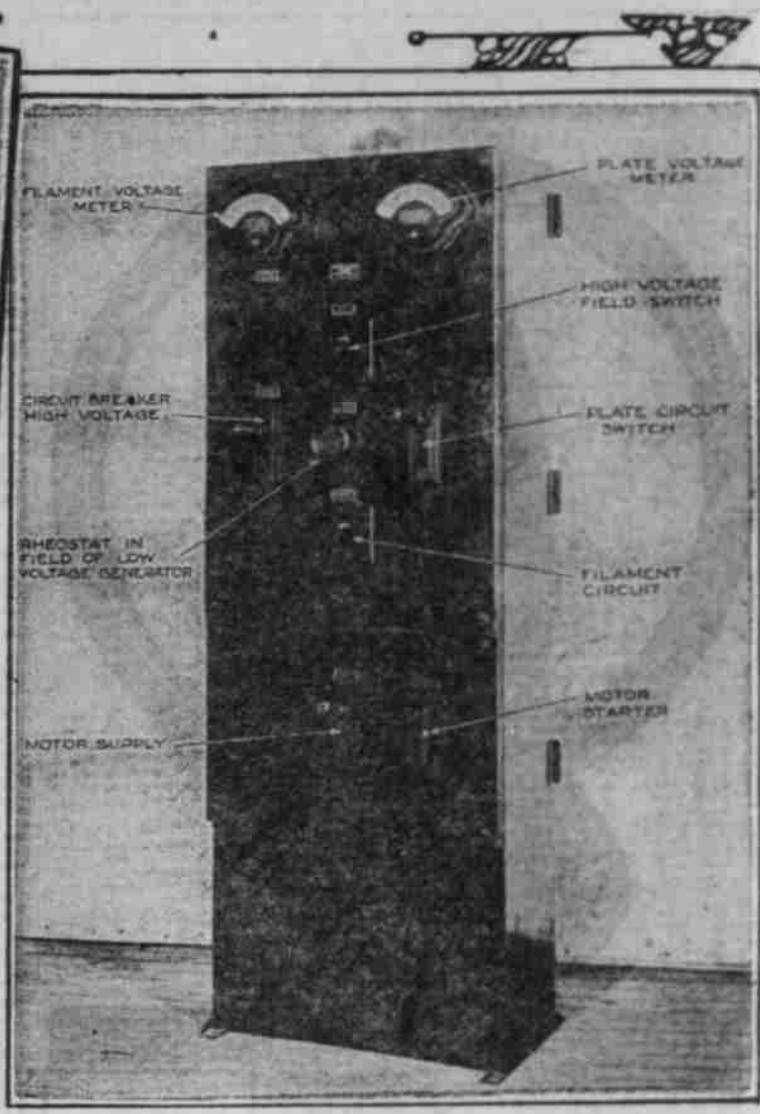
No. 1 Speech Input Amplifier



Side View of Radio Transmitter



Radio Transmitter Panel



Power Panel

"HELLO, all ships and stations—This is radio KGW—The Oregonian's new 500-watt station. Stand by for the programme."

When this call is sent out into the ether a few weeks hence, by the operator in the Oregonian clock tower, a new broadcasting service will have been inaugurated in the Pacific northwest.

Station KGW already has endeared itself to thousands of fans living within a 500-mile radius of Portland. With an output of only 50 watts—a very small fraction of an electrical horsepower—the tiny set of the Oregonian has broadcast ever since its installation in March 1921, excellent entertainment three or four nights during each week. A host of radio friends living in every state west of the Rockies have enjoyed the programmes, and reported their gratification by countless letters. Now the radius will be widened greatly.

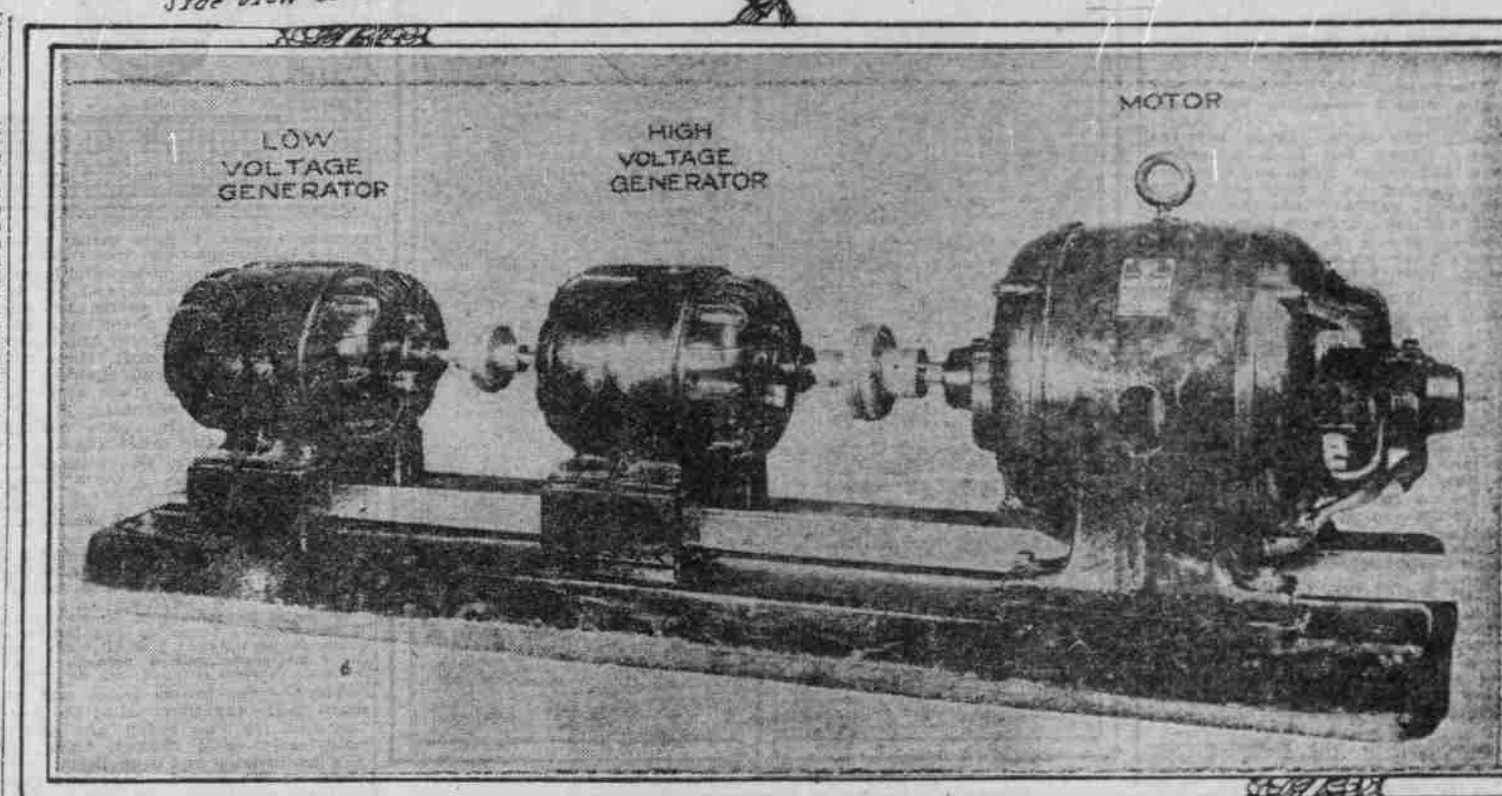
Half a continent and half an ocean will be reached by powerful vibrations that will be set up by the Oregonian's new equipment. Homes where dwell those who lead lonely lives apart from their fellowmen will be reached and brightened by the Oregonian radio service. Far out at sea, voyagers will keep in touch with the events they have left through the events sent out from the Oregonian tower. The Oregonian's new broadcasting station will be unique in many respects. Designed and installed by Western Electric engineers, it will cover a region from 1800 to 1500 miles in every direction of compass, and under favorable conditions it probably will be heard at much greater distances.

detector, and perhaps one stage of amplification and a telephone receiver attached to the sound chamber of a phonograph, will bring the Oregonian entertainments with perfect reproduction.

To obtain ideal operating conditions for the new station, a suite of rooms is being prepared on three floors of the clock tower. Every means of insuring suitable acoustic properties is being taken. The chamber in which the entertainers sing, speak or play will have its walls heavily shrouded beneath layers of draperies and its floor will be buried under the heaviest of carpets. Constant study by the Western Electric experts has proved that to prevent the reflection of sound and to prevent the impairment of the quality of vocal and instrumental music, such precautions are necessary. In the "studio," there will be only one piece of apparatus, the sensitive microphone.

Above the clock in the Oregonian tower is a room which is being fitted up as the apparatus chamber. Both transmitting and receiving equipment will be housed in this room. A feature of the Western Electric up-to-date station is that it is built in units, or panels. In the apparatus room will be the transmitting panel, power panel, input amplifier panel and monitoring receiver, antenna relay control and radio receiving devices.

The main radio transmitter of the equipment will be contained in a large black steel cabinet weighing a ton, in which will be installed the big 250-watt vacuum tube, modulators, relays, resistances and other auxiliary apparatus which make possible modern radio communication. Four 250-watt and one 60-watt vacuum tube will be used in transmitting. These tubes, which have a maximum electrical emission, with a minimum expenditure of filament current, will be mounted in the upper part of the transmitter framework, thus insuring perfect ventilation. This transmitter will generate



Motor Generator Set

radio frequency energy of 500 watts in power, which will be sent out into the antenna, the "carrier" wave. From the microphone in the "studio" below will come the variable voice currents of electricity, fluctuating with the sounds produced by the entertainer or musical instrument. Reaching the transmitter, these currents will be impressed upon the "carrier" wave, thus modulating it in accordance with the original sounds produced.

The Western Electric modulating system to be used in the Oregonian radio plant will insure, according to their engineers, the highest efficiency in clearly reproducing speech and

musical notes in other words, complete and perfect modulation. In the transmitting room, the operator in charge will control the various switches for controlling the power and push a button that will light up a lamp in the "studio." This will mean that the set is ready for operation and the entertainment. In the transmitting room, a monitoring device will bring a reproduction of the sounds from the studio to the operator's ears. If a change in the position of the microphone is necessary for a better transmission of the entertainment, the operator will push other buttons, lighting other lamps in the studio to signal what changes are necessary.

The amount of amplification in the microphone circuit also will be controlled by the operator, who will know by his monitor how much is needed for the different types of musical entertainment. One of the latest developed receivers will make it possible for the station to comply with the government regulations in regard to "distressing" at intervals to determine whether distress signals are being sent or the transmitting operations of the station is causing



Special Microphone

interference with other radio communications. The new station will comply in every manner with the specifications made by the department of commerce regarding the Class B broadcasting stations. At present there are only a few of these stations in existence. Portland will have the distinction of owning one of the first Class B stations west of the Rocky mountains.

The use of a 400-meter wavelength given to the Class B stations will allow the Oregonian to broadcast during any hour of the day. The towers on top of the Oregonian building which hold the antenna will be moved from their position. The big lattice steel tower will be placed on top of the clock tower, and the other now on the clock will be placed on top of the Northwestern Bank building. The new antenna therefore will stretch high above its present place and across the street hundreds of feet away. Below the antenna and directly underneath it will be hung the counterpoise, or the "ground" antenna which is used in radio-phones in place of the ordinary ground.

## COLUMBIA RIVER DISCOVERY COVERED IN PRIZE ESSAY

Grants Pass High School Student Tells of Several Early and Unsuccessful Attempts by Explorers.

The accompanying essay was written by Miss Dorothy Clapp of Grants Pass, Ore., in the contest conducted by the Oregon Historical Society. The essay is "The Discovery of the Columbia River." BY MISS DOROTHY CLAPP, High School, Grants Pass, Ore. INTEREST in the Columbia river is increased by studying not only its actual discovery, but by investigating some of the early unsuccessful attempts to discover it. The efforts to find the river of the west were linked closely with the search for the northwest passage through North America and with other explorations by men such as Perseus, Juan de Fuca, Hegeta, Cook, Meares, Vancouver and Gray. Nearly all of these men realized that there must be some great inland waterway, for they had evidence of it, but nearly 200 years of exploration elapsed before Gray proved the existence of the stream. The man who first published a story of the western waterway was Gaspar Cortereal, a Portuguese navigator. In 1500 he claimed to have sailed through a narrow channel westward from the coast of Labrador into the south sea. This passage was called by him Anian. From other romantic voyages and imagined discoveries, too, the idea of a possible water route grew and the explorers soon sought the Straits of Anian as the longed-for passage. A search for the eastward opening of the passage was carried out by the British soon after Cortereal published his story, and it was with high courage that the Spanish first sought the westward opening in the Pacific. In the early part of the 16th century, the Spanish, for several reasons, wished to explore the Pacific coast thoroughly. There had

northward for the purpose of finding the northwest passage, through which he wished to make his return trip. He sailed as far north as 42 degrees latitude, and then turned southward without finding the object of his search.

Greek Discoverer Strait. In 1522 Juan de Fuca, a Greek in the employment of Spain, claims to have discovered a strait about 42 degrees latitude. Upon entering this strait he sailed eastward and north for 20 days, when he came to the Atlantic. This story is regarded as a myth by most historians, but the belief of this account led to the expedition of Cook. The strait entering Puget sound now bears the name Juan de Fuca.

In order to prevent more expeditions similar to Drake's the Spanish king ordered the Mexican governor to explore and fortify the California coast. Accordingly in 1605 Vincino was sent with two ships to explore the coast, but the ships were separated and the "Fragata" in command of Martin Aguilar ran up the coast as far as 42 degrees latitude. There he found a cape to which he gave the name Cape Blanco. From this point he followed the northern trend of the coast and soon found the mouth of a large river. It was probably the Umpqua at flood stage. This, he claimed, was the real western entrance of the Straits of Anian, and after this voyage navigators searched for a great western river rather than the strait. After this voyage about 160 years passed before more discoveries were made. The Spanish and French had been nearly pushed out of eastern North America. The Russians also were pushing down from the north and the Spanish, fearing for their power on the Pacific, decided on a plan of northern expansion to strengthen their claims. The next expedition was entrusted to Juan Perez in 1774. He sailed as far north as 54 degrees and then turned south to Nootka harbor, which he named San Lorenzo. He also sighted the Olympic mountains, which he named Sierra de Santa Rosalia, but he left no evidence of having seen the mouth of a great river on the Oregon coast. In 1776 Captain Bruno Hegeta

and Bodega sailed with instructions to return to California, and while running along the coast in latitude 46 degrees 10 minutes, he found himself at the mouth of a large river. He made two attempts to enter the bay, but finding this impossible, he named the bay Assumption Inlet. From proof established by him this is now known to have been the Columbia river. The fears of the Spanish were about to be realized, for in 1776 the British government decided to send Cook to the Pacific to explore and search for a passage eastward, around the northern extremity of North America. Cook spent two years in southern waters and then sought the coast of Oregon. Cook held his course to the north until he sailed through Behring's Strait, but there is no record that he saw the Columbia. He reached this point in August and as it was too late in the year to carry on the search for the passage, he turned south to the Hawaiian islands, to spend the winter. While there he was killed by the natives, February 6, 1779.

In 1786 La Perouse, in French interest, sailed north down the coast, but his voyage did not have any tangible results. In 1787 Barclay, an Englishman, discovered the entrance to the Straits of Fuca. However, he did not follow this discovery up. Coast Well Explored. The Pacific coast at this time had been fairly well explored, but there still remained some land about which very little was known. This was the country which lay between Cape Flattery, a cape at the southern side of the entrance to the Straits of Juan de Fuca on the north, and Cape Mendocino, a cape on the extreme western point of California, latitude 40 degrees, 26 minutes and 34 seconds, on the south. Captain Meares, an Englishman, had first come to the Oregon coast for trade in 1786, but in 1788 he returned again in command of the ship "Pellico" under the Portuguese flag. He determined to explore this strip of unknown land

refused to make further explorations with Gray. Gray, however, managed to enter the waterway and explore it. On May 11, 1792, he succeeded in crossing the bar of the river. American energy had placed the Stars and Stripes over another source of wealth which had not yielded the less eager advances of other countries. The river was most appropriately named the Columbia, the south slope Adams and the northern Hancock. After Gray left the Columbia he again encountered Vancouver and related to him the discovery of the river. Immediately Vancouver directed Broughton to enter and explore the Columbia. This he did and later united with Vancouver in an effort to discredit Gray, claiming that the American captain had not seen the river proper, but in spite of this report Gray was given the honor of discovering the Columbia. Thus the mouth of our great river was discovered. It seems that something should be written about the discovery of the headwaters of the Columbia, for as well as by sea, Alexander Mackenzie in 1793 crossed the continent from the Pacific river region and later united with Vancouver on the Fraser river for many miles and then cut overland to the Pacific, which he reached July 22, 1792. He had proved there was no passage across North America short of Berling's straits, but he had failed to reach the Columbia river, which was the object of his journey.

Indian Guide Used. The first overland expedition of Americans which reached the Columbia was made by Lewis and Clark. They started in the spring of 1804 from St. Louis. They ascended the Missouri river and spent the first winter with the Mandans, a friendly tribe of Indians. On starting again on their journey in the spring they took with them Sacajawea of the Shoshone tribe as a guide. Lewis and Clark's policy toward the Indians was always kindness and they had little trouble on their journey with them. They

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