

# HOW THE TELEPHONE WAS INVENTED.

## Prof. Alexander Graham Bell, For the First Time, Tells the Story of Its Scientific Birth—Romantic Story of Poor Young Scot in Boston, Who Taught all Day and Experimented all Night, Impelled by Love of a Beautiful Woman.

By JAMES McILHANN THOMSON.

The first steel and copper wire used by one great telephone company in the United States of America alone is of more than sufficient length to loop the earth to the moon. In fact, if it were possible to make the connections and to support the 72,000 miles of wire which this company reports as being used throughout its various circuits on Jan. 1, 1899, three different wires could be stretched between our planet and her lunar satellite.

America is the birthplace of the telephone. Its discovery was made general transmission of speech by the electric current.

"Get it," Prof. Henry's Advice. The year of 1875 dawned dark and gloomy enough on the struggling young inventor to have discouraged almost any one other than Bell. After he had completed his system of multiple telegraphy and applied for his patent he was thrown into consternation by finding that his rights to the original invention were contested by the distinguished scientist, Elisha Gray of Philadelphia, to whom Washington in look after his interests, and while there called on the veteran physicist and electrician, Professor Joseph Henry, the secretary of the Smithsonian Institution.



Alexander Graham Bell

ALEXANDER GRAHAM BELL—From a Recent Photograph.

Miss Hubbard's Commands. Mr. Gardner Hubbard was attending the exposition during the winter of 1880. He learned that on Sunday, June 25, the board of judges of the exposition, including President Sir William Thomson, since Lord Kelvin, was in company with the Emperor of Brazil, to inspect some of the exhibits of the distinguished scientist, Elisha Gray. As a special favor, Mr. Hubbard obtained from them a telephone which was placed in an exhibit case in the Smithsonian building, and attracted little or no attention.

The young man began to explain about his own discovery, and which would determine him from taking the trip. "Well, could you take a drive with me," said his fiancée, "I have had a long drive, but I cannot refuse. He got in the carriage immediately and was driven to the station. There, Mr. Hubbard descended. Mr. Bell did likewise.

ally known in Philadelphia, during June, 1876, 20 years after the signing of the Declaration of Independence, and at the Centennial exposition which commemorated that event. The story of the invention of the telephone is, in many respects, the most romantic and interesting part of this one of the world's wonders.

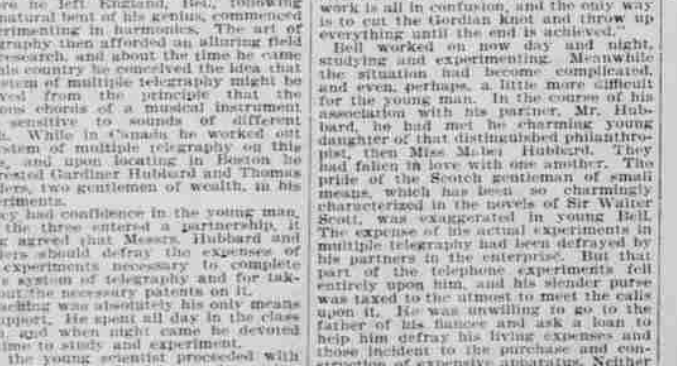
In the course of his interview with Professor Henry he explained his ideas for the construction of the telephone. He then wrote to his father and mother in Canada, calling them to his attention, and asking them to help him in his work. He then wrote to his father and mother in Canada, calling them to his attention, and asking them to help him in his work.

Mr. Bell, you are going to Philadelphia to exhibit your discovery. I have had a long drive, but I cannot refuse. He got in the carriage immediately and was driven to the station. There, Mr. Hubbard descended. Mr. Bell did likewise.

First Electrical Work. Meanwhile, and even before he left Philadelphia, young Bell had commenced experiments in that branch of physics and electricity which embraces sound. To the task of an inventor in this line he brought a life-long training for the profession of a teacher of vocal physiology, and a knowledge of the human voice to produce and perceive articulate sounds. The groundwork of the system which he developed consisted in directing the vocal organs which produce the motions of the vocal chords, and the motions of the vocal chords, and the motions of the vocal chords.

But the telephone which Bell exhibited at the Centennial Exposition would scarcely be recognized as the parent of the wonderfully complex instruments used today by the great company which bears his name. It is true, however, that the basic principles of the instruments which now transmit messages amounting into the billions annually are identical with those first applied by Bell.

me less this morning than you do now." And she burst into tears. "Protect the Children. Worms rob children of the life-giving properties of their food, retard their growth and weaken their constitution for life. Most mothers know the symptoms of worms. Children are pale, restless and peevish, appetite is fickle and sleep is disturbed. Thousands of mothers have found White's Cream Vermifuge a prompt, safe and absolutely certain remedy. It kills worms and gives the child strength and vitality. You can't afford to take chances with wormless imitations; remember the name. Price 25 cents. Sold by Z. C. M. I. Drug Department.



Instrument Through Which the Emperor of Brazil and Lord Kelvin First Spoke at Philadelphia Centennial, 1876.

There are many persons now who remember with what incredulity they read the first press accounts of Bell's discovery of the telephone. Some people even refused to believe after they had seen the work in his laboratory, Messrs. Hubbard and Sanders, who were present at the Centennial Exposition, were among the first to be convinced of the truth of his discovery.

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# WARSHIP.

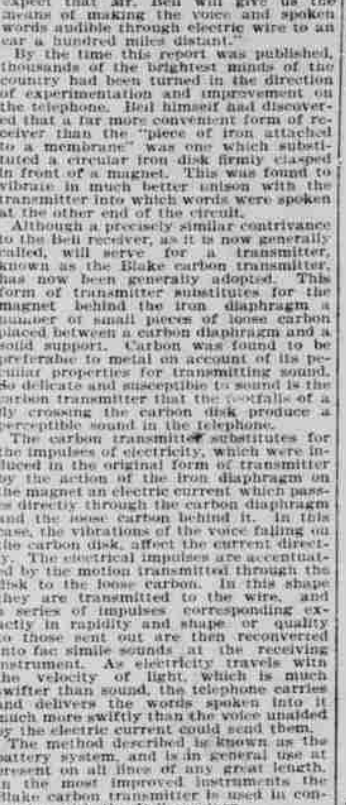
## Heretofore Worthless Product of Western Farms to Make Our Warships the Best in the World—All New Vessels of Navy to Utilize Pith of Stalks—Advantages Are Great—Distinct Advance in Naval Construction—Millions For Farmers.

A new device in warship construction has been found, which, it is believed, will make the American navy, ship for ship, the superior of any other in the world. Curiously enough, the material for this improvement comes not from our seaboard products, but from the waste of western farms. Its value lies in the fact that it will prevent a vessel's fighting ability from being destroyed even after she has been pierced in a dozen places.

lose, tested at the same time, failed to come up to these requirements, and since then the use of corn pith has been adopted in all of our naval construction. The cellulose is packed in the cofferdam space between the outer and inner walls of the ship. A belt of it three feet thick backs up the armor belt, extending six feet above and six feet below the water line, entirely around the hull. Fifty tons of it is required to equip a vessel of the Illinois class, and this is computed to equal 550 tons of steel in adding to the defensive strength of the ship. It takes about fifteen tons of the raw material to provide one ton of cellulose. To supply this important feature in the construction of each of our new battleships, therefore, requires 150 tons of stalks, or the product of more than 200 acres of corn land.

knives, strips off the "shiv," the hard outer portion of the stalk and the tough fibres that run the length of the stem. Only the soft inner portion is left. From the stripping machines the whole mass falls upon long traveling strips of canvas. The elastic nature of the pith causes it to bound up and down on the canvas until it falls off into a receptacle prepared for it. The chipped-up stalks and leaves go on to the end of the traveling curtains, where they are dumped into cribs. The pith goes next to the compressor, where it is packed to about one-fourth its former bulk. Even then it is so light that only about three tons can be packed into an ordinary freight car. The other products are carried away for mixture into the prepared food in which they are used.

For a new industry the cornstalk business is remarkably active. By the



THE NEW BATTLESHIP "WISCONSIN"

ever since we began to build steel armored vessels. To meet this need the French engineers and their staff, it may be used to add to the safety of merchant and passenger ships. Most ocean disasters result from collisions between two ships or from a vessel striking upon hidden rocks. The cellulose packing swells to nearly ten times its original bulk under the influence of water, it would serve to close up even the yawning hole torn by a liner's new bow, and would thus remove the most horrible features of ocean catastrophes.

The two new passenger ships, the largest ever constructed in this country, which the Cramps have undertaken to build for the American line, will probably have the corn pith packing to add to their buoyancy and safety. Mr. Cramps is an enthusiastic believer in the new device.

end of a decade the statistics of the cornstalk industry will probably be counted in millions, and its influence in adding to the prosperity of the great corn belt should be very marked.

cause for tears. "Oh, Harold, do you love me?" he implored the bride of his business and pleasure. "I have had a long drive, but I cannot refuse. He got in the carriage immediately and was driven to the station. There, Mr. Hubbard descended. Mr. Bell did likewise.

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### BOOKS THAT ARE RARE.

Old-time Volumes Sell For Their Weight in Gold. The first edition of "The Canterbury Tales," England, by a merchant named Caxton, who forsook his trade to enjoy the favor of the Duchess of Burgundy, sister of Edward IV of England, and in 1476 imported from Germany a printing outfit which he established in a building adjoining Westminster abbey especially for the purpose of publishing his translation of the history of Troy ("Rescued from Histories de Troyes"). It was the first English book ever printed, and the first printed in America, by the Earl of Ashburnham for \$7,000.

The next book printed in England was "The Game and Playes of Chess." Copies have been sold as high as \$1,300. The first English book both written and printed in England (1849) was "Dietary and Scenery of the Alps," which only four copies are known. One of them was sold last year by the Earl of Ashburnham for \$7,000.

The first book printed in America was "Doctrina Christiana," by Juan Cromberger, in the City of Mexico, in 1539. So far as known, there is not a copy in existence. The second was "Doctrina Breve," also by Juan Cromberger, the Bishop of Mexico. It was printed by Cromberger in 1543, and copies have sold as high as \$1,200.

The first book printed in the United States was an almanac at Cambridge in 1839, by Stephen Daye, who established the first printing press in this country. The second publication was a "Doctrina Christiana," by Juan Cromberger, in the City of Mexico, in 1539. So far as known, there is not a copy in existence.

### PITH CELLULOSE ON OUR NEW BATTLESHIP.

In the same way that the corn pith enables our fighting vessels to keep afloat, even after holes have been punched in their sides, it may be used to add to the safety of merchant and passenger ships. Most ocean disasters result from collisions between two ships or from a vessel striking upon hidden rocks. The cellulose packing swells to nearly ten times its original bulk under the influence of water, it would serve to close up even the yawning hole torn by a liner's new bow, and would thus remove the most horrible features of ocean catastrophes.

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### A Splendid Day's Outing.

If you want an enjoyable trip, take the Rio Grande Western excursion to the Garden and Ogden canyon Sunday next at 8:30 a. m. A fine chicken, fish and berry dinner for 50 cents at the Hermitage in canyon. Conveyances come from Ogden Union depot; but 25 cents for canyon trip.

The highest price paid for a book last year was \$18,500, by Pickering & Chatterton of London, for "Roulet Le Fevre's 'A Book of the Hood Lark of Glaston' printed by Caxton in 1490 in black letter. It is one of the earliest books in the English language, and formerly belonged to Bishop Heiler. Some biographical details on the fly leaves in his handwriting greatly increase its value. A copy of the book was sold for \$2,750. The first edition of "The Vicar of Wakefield," printed in 1766, sold for \$300; the first edition of "Paradise Lost" for \$400; the first edition of "Zoroaster's Confessions," containing a presentation inscription on a fly leaf in his handwriting, \$1,150.

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