

Anniversaries of Science

July 27, 1866—The Atlantic cable was successfully landed at Newfoundland.

In 1852, an engineer named F. N. Gisborne, conceived the idea of connecting by telegraph New York and St. John's, Newfoundland. By this the time of communication between the two continents was to be shortened by two days. Part of the line was to consist of a submarine cable across the Gulf of St. Lawrence. Running out of funds, he applied to Cyrus W. Field, a retired merchant of New York, for financial assistance. Although Field had amassed a fortune, he was still a young man, and the project strongly appealed to him. It soon occurred to Field that of far greater importance to commerce was a direct cable joining the Old World with the New; in other words, a cable under the Atlantic. It became Field's great obsession. Seldom has any man been fired with a more contagious enthusiasm or a mightier determination.

He began work immediately. The British and American Governments responded to his appeal for assistance, and vessels from each navy were detailed to make soundings of the ocean bottom between Newfoundland and Ireland. The report was exceedingly favorable, and Morse pronounced the project entirely feasible

The next step was to manufacture the cable. Although the distance to be covered was but 1,640 nautical miles, 2,500 miles of cable were supplied. It consisted of seven copper wires insulated with the newly discovered gutta-percha, wound about with tarred hemp, the whole sheathed in a casing of heavy iron wires.

Four unsuccessful attempts were made to lay the cable. In 1857 and 1858 the cable broke and was lost. In August, 1858, the cable was successfully landed, and messages were exchanged, but too high voltages were used, and the insulation was burned out in about a month. In 1865 the "Great Eastern" was chartered for the fourth attempt, but the cable was again lost.

A man of less steadfast faith and courage would have given up. But Field's purpose was unshakable. A new company was organized and on July 13, 1866, the *Great Eastern* started on her second venture. This time it was crowned with success, and in just two weeks the cable was safely landed on the Newfoundland shore. From that day to this the world has never been without transatlantic cable service. With little delay the *Great Eastern* sailed back to recover the last cable of the previous year. After hooking the cable twenty-nine times, and as often losing it, the thirtieth effort brought it to the surface. It was spliced with new cable and carried in safety to the cable station at Heart's Content, Newfoundland.

—Darrow in *A Popular History of American Invention*.

Science News-Letter, July 23, 1927

July 28, 1851—The sun's corona was photographed during an eclipse for the first time.

The interest aroused in eclipses was now so great that astronomers were determined to take advantage of every opportunity, no matter how short the time of totality nor how great distances it was necessary to travel in order to view the eclipses. The eclipse of July 28, 1851, was visible in Norway and Sweden, and English astronomy was well represented in the persons of the astronomer royal Airy, Hind, Dawes, Carrington, Stephenson, Gray, Lassell and Williams. Although Faye still asserted with force that the prominences were merely optical illusions or "mirages produced near the moon's surface," the general consensus of opinion was that the origin of the red flames was to be sought in the sun. To this fire of scarlet hue Airy gave the name sierra.

Any lingering doubts regarding the origin of this sierra were forever dispelled by the observations made at the eclipse of July 18, 1860, visible in America, Spain, and Northern Africa. The solution of the problem was accomplished by photography which was applied for the first time at an eclipse with anything like success. . . . Photography had already been applied at the eclipse of 1851 when Busch obtained some feeble impressions of the eclipsed sun by the daguerreotype process. Photography was even attempted in 1842 using iodized paper, but with no results.

—Mitchell: *Eclipses of the Sun*.

Science News-Letter, July 23, 1927

August 1, 1774—Priestley discovered oxygen.

Having procured a lens of twelve inches diameter and twenty inches focal distance, I proceeded with the greatest alacrity, by the help of it, to discover what kind of air a great variety of substances would yield, putting them into the vessel, which I filled with quicksilver, and kept inverted in a basin of the same. . . . With this apparatus, after a variety of experiments . . . on the 1st of August, 1774, I endeavored to extract air from *mercurius calcinatus per se*; and I presently found that, by means of this lens, air was expelled from it very readily. Having got about three or four times as much as the bulk of my materials, I admitted water to it, and found that it was not imbibed by it. But what surprised me more than I can express was that a candle burned in this air with a remarkably vigorous flame, very much like that enlarged flame with which a candle burns in nitrous oxide, exposed to iron or liver of sulphur; but as I had got nothing like this remarkable appearance from any kind of air besides this particular modification of vitreous air, and I knew no vitreous acid was used in the preparation of *mercurius calcinatus*, I was utterly at a loss to account for it.

—Priestley: *Experiments and Observations on Different Kinds of Air*.

Science News-Letter, July 23, 1927

The health officer of New Haven, Conn., sends a birthday card to each baby on its first birthday, telling the baby ways to insure good health.

AVIATION

Air Speed Limited?

With the hope of recapturing for America the world's airplane speed record, a 1,000 horsepower machine is being built at Garden City, N. Y., for the Navy pilot, Lieut. Al Williams. The world's record is 278.48 miles an hour, held by Warrant Officer Bonnett, of France.

Enthusiasts are discussing speed possibilities. Can a man build a flying machine that has more endurance than his own body? Can a creation of man's brain out-ride its creator? Major Louis H. Bauer, Medical Corps, U. S. A., expert on aviation medicine, thinks the mechanically possible may be the physically impossible.

A speed may yet be attained which will not allow a turn to be made. Even if the plane can stand it, pressure on the stem of the brain caused by a sharp curve may cause death. He thinks it is doubtful if man will be able to withstand a speed of much over 300 miles an hour on sharp turns. A flyer may be able to withstand straight ahead spurts at much higher speed.

The question is yet to be answered. Lieut. James H. Doolittle, of the Army, probably acquired a speed of 350 miles or more when he recently accomplished the amazing feat, an outside loop. He learned more about the physical effects of terrific centrifugal force than even crack pilots care to learn. He is said to have described how his eyeballs were so extended that they touched the goggles.

Although it has not yet been tested in the airplane, Lieut. Williams' new engine has already developed 1,000-horsepower. It is a Packard 1,200 horsepower motor and has twenty-four cylinders built in the X-type.

What Lieut. Williams is going to do with it is a different, if not a greater, feat than straight distance flying over oceans and deserts. Any good flyer, according to one of them, can fly a good plane anywhere. If he starts to race he must learn all over again. The ordinary flyer pulls the stick and climbs a nice slope. If a racer just thinks of pulling the stick he is liable to shoot up at a tremendous speed.

Science News-Letter, July 23, 1927

Latest plans for airplanes are said to permit of non-stop flights much farther than from Paris to New York.