## Anniversaries of Science

**January 5, 1769**—James Watt obtained the first of his four patents for a steam engine.

When Watt grew up he became an instrument maker at Glasgow University, and it was here that a model of Newcomen's steam pump was brought to him one day for repair. This engine . . . . . wasted steam in a shocking fashion, for since at every stroke cold water was driven into the cylinder to condense the steam, most of the energy of each fresh inrush of steam was wasted in reheating the cylinder. Watt resolved to find some way of preventing this waste, and for two whole years spent nearly all his spare time in puzzling out the problem . . . . As he was taking a walk one fine Sunday in 1765, suddenly, as he says himself, "the whole thing was arranged in my mind." His great idea was to connect to the working cylinder a vessel into which the steam could be exhausted for condensation so that it would be possible to keep the cylinder itself constantly hot.

—T. C. Bridges: *The Young Folks' Book of Invention.*

**January 6, 1706**—Benjamin Franklin was born in Boston.

That felicity, when I reflected on it, has induced me sometimes to say, that were it offered to my choice, I should have no objection to a repetition of the same life from its beginning, only asking the advantages authors have in a second edition to correct some faults of the first. So I might, besides correcting the faults, change some sinister accidents and events of it for others more favorable. But though this were denied, I should still accept the offer.

—Benjamin Franklin: *Autobiography.*

**January 7, 1610**—Galileo first saw the satellites of Jupiter, through a telescope of his own construction.

Oh, my dear Kepler, how I wish that we could have one hearty laugh together. Here at Padua, is the principal professor of philosophy whom I have repeatedly and urgently requested to look at the moon and planets through my glass, which he pertinaciously refuses to do. Why are you not here? What shouts of laughter we should have at this glorious folly. And to hear the professor of philosophy at Pisa laboring before the grand duke with logical arguments, as if with magical incantations, to charm the new planets out of the sky.

—Galileo Galilei: Quoted in *Makers of Science* by Ivor B. Hart.

**January 8, 1825**—Eli Whitney died, inventor of the cotton gin. In twelve years the export of cotton rose from 189,000 pounds to 4,000,000 pounds per annum.

At that time, astonishing as it may seem, the cotton crop of the entire country could have been raised on a field comprising not more than 200 acres. The price of cotton was exceedingly high because of the cost of preparing it for the market. The chief expense was in cleansing it of the dirt, leaves, and the seeds which clung to the fibres. It appeared unlikely that cotton could ever be raised in large quantities in this country because of the cost of preparing it for the use of the spinner.

One evening Mrs. Greene was entertaining a distinguished gathering of Southern gentry, and the conversation turned to this particular problem.

"Surely, Mr. Whitney can supply your needs," said Mrs. Greene, with confidence in her protege. Her guests regarded the remark as a pleasantry, but young Whitney took it in all seriousness. Never having seen a cotton-plant, the next day he went into the country and obtained samples of the bolls. Ten days later he had a model of a cotton-cleaning machine.

—Kaempffert: *Popular History of American Invention.*

Science News-Letter, January 1, 1927

GENERAL SCIENCE

## Wren Cipher Solved

What appears to be the correct solution for the cipher of Sir Christopher Wren, mentioned in the SCIENCE NEWS-LETTER for December 4, 1926, has been furnished by Prof. Bancroft H. Brown, of Dartmouth College. This cipher, which is given in Sir David Brewster's "Memoirs of Life and writings of Sir Isaac Newton" (Edinburgh), was found by him among Sir Isaac's papers. It was said to have been composed by Sir Christopher and presented by him to the Royal Society on November 30, 1714, when he was over eighty years old, and to describe an apparatus for determining longitude at sea. He died, however, before he could give a solution, and, so far as is known, none has ever before been published. The cipher is as follows:

OZVCVAYINIXDNCVOCWEDCN-
MALNABECIRTEWNGRAMHHC-
CAW
ZEIYEINOIEBIVTXESCIOCPS D-
EDMNANHSEEPRPIWHDRAEH-
HXCIF
EZKAVEBIMOXRFCSLCEEDH -
WMGN NIVEOMREWWERRCSH-
EPCIP

Prof. Brown's solution is as follows: "Reverse the letters in each paragraph, omit every third letter, the cipher now reads:

WACH MAGNETIC BALANCE
WOVND IN VACVO
FIX HEAD HIPPES HANDS
POISE TUBE ON EYE
PIPE SCREWE MOVING
WHEELS FROM BEAKE.

"The omitted letters spell:

CHR WREN MDCCXIVZ."

Just what sort of an apparatus Sir Christopher described is not entirely evident, but Prof. Brown makes the following suggestions:

"On the face of it, I should say that the first sentence refers to a chronometer of particular type, while the second and third sentences refer to a method of obtaining the altitude of a star (possibly the moon, or Jupiter's moons, though there is no clear evidence of either) while at sea. Let me be a little more explicit.

"'WACH MAGNETIC BALANCE WOVND IN VACVO.' 'WACH' is presumably 'watch.' 'MAGNETIC BALANCE' conveys very little to me, possibly it refers to some device for eliminating magnetic disturbances. 'WOVND IN VACVO' apparently means just that, a chronometer in a vacuum, and wound in the vacuum. Perhaps the winding was to take place by means of a magnet.

"'FIX HEAD HIPPES HANDS POISE TUBE ON EYE—PIPE SCREWE MOVING WHEELS FROM BEAKE.' This, like the preceding, needs careful study by an expert in mechanical terms and usages of the early eighteenth century. It seems to imply something like this: At some elevated in the forepart of the ship (BEAKE means bowsprit, or some elevated point in the forepart of the ship (BEAKE means bowsprit, or some elevated fixed point) a screw enables a wheel to be moved up and down. The observer fixes his head in a definite place, poises a telescope (tube), and observes some star; he signals to his assistant to raise or lower the wheel at the beake until he secures an alignment. He thus obtains (from known measurements on the ship) the altitude of the star. This determination, together with the time, is obviously sufficient to determine longitudes."

The SCIENCE NEWS-LETTER will be glad to receive any further suggestions from its readers as to what the apparatus actually was.

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MEDICINE

## Hormone a Gland Substitute

The female hormone may soon be on the market for regular medical use. Several biological products' firms are engaged in preparing and standardizing it, according to Prof. Edgar Allen of the University of Missouri. Early results from clinical tests, he declares, indicate that this important substance may be a useful agent in treating many of the disorders that women undergo as a consequence of their function as the reproducers of the human race. The action of the ovarian hormone is fundamentally one of inducing growth in the female genital organs.

Extracts of the active substance seem to be an adequate substitute for the internal secretions of the ovaries.

Science News-Letter, January 1, 1927