

CONDENSED HISTORY OF STEAM.

ABOUT two hundred and eighty years B. C., Hiero, of Alexandria, formed a toy which exhibited some of the powers of steam, and was moved by its power.

A. D. 450. Anthemius, an architect, arranged several caldrons of water, each covered with the wide bottom of a leather tube, which rose to a narrow top, with pipes extended to the rafters of the adjoining building. A fire was kindled beneath the caldrons, and the house was shaken by the efforts of the steam ascending the tubes. This is the first notice of the power of steam recorded.

In 1543, June 17th. Blasco D. Garay, tried a steam-boat of 209 tons with tolerable success, at Barcelona, Spain. It consisted of a caldron of boiling water, and a movable wheel on each side of the ship. It was laid aside as impracticable. A present, however, was made to Garay.

In 1825, the first railroad was constructed at Newcastle-on-Tyne.

The first idea of a steam-engine in England was in the Marquis of Winchester's *History of Inventions*, A. D. 1762.

In 1710, Newcomen made the first steam-engine in England.

In 1718, patents were granted to Savery for the first application of the steam-engine.

In 1764, James Watt made the first perfect steam-engine in England.

1730, Jonathan Hulls set forth the idea of steam navigation.

In 1778, Thomas Faine first proposed this application in America.

In 1781, Marquis Souffroy constructed one in Saone.

In 1785, two Americans published a work on it.

In 1789, William Tymington made a voyage in one on the Forth and Clyde Canal.

In 1802, this experiment was repeated.

In 1782, Ramsey propelled a boat by steam to New York.

In 1783, John Fitch, of Philadelphia, navigated a boat by a steam-engine on the Delaware.

In 1793, Robert Fulton first began to apply his attention to steam.—*From the New York Teacher.*

SCHOOL APPARATUS.

THE blacksmith, the carpenter, the tailor, the mechanic of whatever calling, is not—so far as accomplishing anything is concerned—any better off for his knowledge, unless he has at the same time suitable tools to work with. And so it is in teaching; the teacher must have certain school-room apparatus, certain tools to work with, if he is to accomplish what is expected of him. Yet how seldom is it that he is provided with proper instrumentalities for carrying on his work. He may, indeed, "understand all mysteries and all knowledge;" and yet, as a man understanding all these, but without "charity" is "nothing"—so the teacher understanding all these, but without suitable school-room apparatus, is "nothing," or the next to nothing.

Time was when it was scarcely dreamed that the teacher required anything in the way of apparatus, as we now understand the term. He entered upon his duties without any resources whatever, except a few imperfect and now happily obsolete textbooks and his own mental acquirements. The raw material of youthful intellect was given into his hands to be shaped into a form of beauty and excellence, and yet the teacher was expected to effect this without instrumentalities, without apparatus—to make bricks without straw! As well almost might the smith be required to forge a chain, or the carpenter build a house, without the proper implements to work with.

It was a long step in the right direction when blackboards were first introduced. It was such an innovation upon the ideas of the educational antediluvians, that in many localities it is not even yet recognized as a necessary adjunct to good teaching; and school-houses in which the blackboard is still wanting are not difficult to find. But the blackboard has been introduced as a general thing into our schools, and wherever there is a live teacher, it is considered a *sine qua non*—an essential to school-room success.

With the introduction of the blackboard has been inaugurated a new system of teaching. The competent, wide-awake, conscientious teacher finds a constant use for the blackboard. Good use can be made of it in imparting instruction in every branch of common-school study. Its uses are so many, and its advantages so manifest, that we cannot stop to discuss them:

Crowding close upon the introduction of the blackboard, came cards for teaching spelling and elementary reading. Close upon these, again, have come outline maps, charts, etc. The custom of providing these things, however, is still more honored in the breach than in the observance. In addition to these, globes, orreries, and so on, are found in many schools, though not in nearly so many as they should be found.

Teaching with apparatus—by means of tangible objects or representations—has come to be almost the sole practice. The smallest children are taken in the Kinder-Garten establishments,

and taught to perform wonders with blocks, wands, scissors and paper. In schools a little more advanced objects are examined, analyzed, and explained; and in institutions of every grade the old-fashioned system of instruction—learning words without meaning—is passing rapidly away. The result is, that while the rising generation has less of that parrot-like knowledge of words which the old system produced, it has a more thorough, useful and practical knowledge of things. "I love the young dogs of this age," said old Dr. Johnson, on one occasion, "they have more wit and humor and knowledge of life than we had; but then added he, 'the dogs are not so good scholars.'" We think "the young dogs of this age" have, as we said above, a more thorough, useful, and practical knowledge of things, and are at the same time quite as "good scholars" as the children of the generations past. This is owing alone to our improved methods of instruction.

It is an important part of the duty of those who have charge of our schools to provide them with suitable apparatus. Rouses and teachers are indispensable; but good apparatus is scarcely less so. Let our teachers have proper implements to work with—then we may reasonably expect work to be done.

T. J. CHAPMAN.

CHARLES DICKENS.

DOUBTLESS in all the world there is no man of letters whose death could cause so widespread and sincere a grief, and a grief that was in very many hearts so profound, as that caused by the death of Mr. Dickens. Not only wherever the English race exists—in the British Islands, in India, at the antipodes, and round the world again to America, where he has given happiness to millions of readers—but also in almost every country, within the limits of civilization, the creations of his pen have for many years been familiar figures, and have attracted to him the strong liking as well as the high admiration of innumerable men and women and children. Every great author has a multitude of friends whom he has never seen and will never see, but there can none be named, of any tongue, who might not be taken away and leave behind regret for his loss in fewer households than have been saddened, the world over, by the death of this most beloved of story-tellers. Opinions might differ as to his place among men of genius; and there have even been more opinions than one as to his right to be ranked among men of genius at all; nor has he been without enemies; nor did it happen to him more than to others to go through life without giving to his enemies some grounds for their attacks; but that he had a generous and loving nature, delighting in happiness and in conferring happiness, was never denied by those who cared for him least; and in hearts that knew the kindness of his he has long had a home. It is good criticism of him—whether or not it was meant to be other than eulogy and a tribute of admiration—when Thackeray, at the end of the "English Humorists," relates of one of his little girls how when she is sad she reads "Nicholas Nickleby;" when she is glad she reads "Nicholas Nickleby;" and when she is tired or ill she reads "Nicholas Nickleby;" and when she does not know what to do there is always "Nicholas Nickleby" to read; and when she has done reading it she begins it over again, and is constantly asking her papa, why, instead of writing certain other novels, he does not write one like "Nicholas Nickleby." Mayfair, and Brighton, and the conversation in the club-room windows, and Mr. Pen's indifference must indeed have seemed either meaningless or hateful to the soft heart and the untutored taste of the little reader when she put her father's work into comparison with the lampblack-and-lightning picture of the villainy of the wicked old Ralph; and the patience and impatience under all he had to put up with of ragged Newman Noggs; and the cruelty and subsequent righteous downfall of Mr. Squeers; and the badness of young Squeers; and the wretchedness and piteous end of poor Smike; and the heartiness of Mr. John Browdie, and of his Yorkshire puddings and game-pies. In all this, kindness of heart which everybody can appreciate, and a disregard of the niceties of art, or, indeed, an obvious ignorance of them and insensibility to them, are the things most striking.

It is probable that no truly good writer gets his true audience in his own generation. He must wait and he must learn to be content at first with being liked for things in him that are not essential. His true public, which values him for what in him is really and always valuable, is made up from the capable readers and writers of successive generations. We do not know with precisely what accuracy it is said, but they say that of all Dickens' stories the one most successful with the contemporary public was that in which is narrated the life and death of "Little Nell." And it would, perhaps, be impossible to prove—as, indeed, it would be not unconsentant with the affection for him that most of his readers feel—that it is for this pathos, or at least for his sympathy with the suffering, rather than for any other quality of his, that most of his admirers admire him. He himself, as he reads his works, seemed to value as much as anything such things as the account of "Tiny Tim" in the "Christ-