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## MANUAL DEXTERITY.

instead of being repressed as it long has been-with what success a visit to any district schoolhouse will show, Those fingers which schoolmasters have been wont to look upon as of no other use but be cracked with an oaken ruler are to be dignified and exalted to a first place in our educational system; they are to be trained and taught to follow deftly the dictates of the brain, obedient to its every wish.

What better example of a perfect machine have we than the human hand! Remove the skin and the few little lumps system of levers and pulleys, the economy of space achieved calculate the number of movements imparted to the fingers by these few muscles. Watch the movements executed by the fingers of a musician, whether he plays the bass viol, the zither, or the piano; follow the hand of the compositor, to tie up a bundle. as he sets these very lines, of the type writer, the telegrapher, the rapid knitter, or a blind man reading raised characters, and tell us whether the hand is capable of being trained, or the fingers of being educated.

How many of the graduates who have this summer left their alma maters feeling that their education was comsay; but it is safe to assume that not one in ten had acquired of practical value. more digital skill than was needed to write a letter, tie a necktie, button a lady's glove, and conceal "a crib" in his coat sleeve. It is a notorious fact that in every chemical laboratory, in every dissecting room, and every other place where young men of liberal education are compelled to handle tools, they soon find that their "fingers are all thumbs."

One of the first questions that is always discussed by every school board or institute before whom the question of manual teaching comes up is, Shall we teach only the use of tools, or shall we attempt to teach a trade and turn out finished mechanics? Do both, do either, do anything you like, only give the boys a chance, and leave the rest to time. If it has any vitality in it, it will develop into something. The useless members will wither and fall off, those most fit to survive will assuredly prosper, for the law of "the sur- making. vival of the fittest" is not limited in its field to the growth merce, manufacturing industries, churches and schools, have their development conditioned thereby.

late Professor Rogers, a remarkable success. Fighting its way against poverty and want, it has conquered all opposition, and Boston feels encouraged to try the experiment of incorporating manual education on her public school system. At the Dwight School a classroom has been sacrificed to the hammer and saw. Carpenters' benches have been put in, and tools provided for eighteen boys. It is needless to say military drill, and that even the time taken from study does not retard their progress.

that as in memorizing all the mountains in Asia or the rivers etc., in retorts, and found that these bodies, by the action

sewing is a regular part of the school curriculum, and they From Boston on the east to St. Louis on the west, the not only learn to sew but do it well. This is something changes are being rung on the necessity of teaching the that can be done at slight expense, and teachers that know fingers as well as the minds of school children. No well how to sew are not so scarce. Mr. L. H. Marvel, in his conducted teachers' institute fails to take a vote on it, and paper on "Manual Education in the Public schools," which no educational magazine neglects to publish a paper on appeared in the June number of *Education*, says that in "Manual Education in the Public Schools." The great schools where sewing is taught the sewing does not detract public sentiment seems to have, at last, come to the conclu- from the efficiency of the other work of the school. The sion that not every free born American citizen can live by same writer adds: "Sewing was taught in all elementary his wits, and a few must be content to turn their attention schools half a century ago, and to boys and girls alike." It to manual labor, at least the more delicate kinds, and not, is unfortunate that this has not been kept up; it is better of course, such as shall raise big blisters on the finger and that a school boy should sew or knit, than that his fingers coarse calluses on the hands. The jack knife with which should get no training beyond that of clumsily grasping a the typical school boy has been wont to carve rude charac- : penholder, while his body, is twisted into some painful positers on his desk and bench, is to be exchanged for a kit of i tion to conform to the unhygienic law of the writing master. tools, and the native instinct of "cutting" cultivated, In the kindergarten, which too few of our children enjoy the advantages of, efforts are made to train the eye, voice, ear, and hand, but the training stops when the child enters the school, and its effects are soon dissipated. One point must, of course, be guarded against, that the occupation of the fingers be not such as to strain the eye or produce nearsightedness.

An ingenious teacher would have no difficulty in arranging a series of exercises equal to any of the "finger gym nastics" of the music teacher, without being half so stupid, which should embrace the use of knitting, crocheting, and of adipose tissue, and examine its intricate mechanism; its sewing needles, of stilettos and bodkins, of awls and gimlets, of scissors and penknife; braiding, plaiting, tatting, by one muscle passing through another, and the union of netting, tying knots, and splicing small ropes, are among cords and tendons whereby one finger is given the power to the operations adapted to teaching boys and girls what move totally independently of the rest, and then attempt to their fingers are good for. One of our very skillful surgeons boasts of his skill in sewing, and the ability to hem the finest cambric handkerchief; and it would not injure any boy to be able to work a button hole, nor any girl to be able

The sense of feeling, since it resides in the fingers, could be cultivated at the same time, and while the skin is young and soft is the best time to learn to distinguish things by touch; the difference between wool and cotton, silk and linen, kid and dog skin, sheep and calf, between flour and meal, between pure sugars and mixed, between silver and pleted, knew all the uses of their fingers, we are unable to lead-these are distinctions a knowledge of which will be

# EARLY HISTORY OF GAS LIGHTING.

The city of Chaumont has taken the initiative in the erection of a statue in honor of Philippe Lebon, a native of Brachay (Haute-Marne), France, who, so the French claim, was the inventor of gas lighting.

Many managers and directors of gas works, and a number of scientific men throughout France, have promised the town of Chaumont their support. A provisory committee has been formed, with the may or of Chaumont as an honorary president, and M. Foucart, president of the Technical Society of Gas Industry in France, as the active president.

In order to place before our readers the correct idea of Lebon's relations with this wonderful invention, we give the following brief sketch of the early history of gas

As early as 1726, Stephen Hales, in his "Vegetable Statics," of plants and animals. Cities and towns, trade and com- states that he obtained 180 cubic inches of an inflammable gas from the distillation of 128 grains of Newcastle coal. Bishop Watson, in his "Chemical Essays," describes experi-Boston, as usual, claims to lead in this movement. The ments made on coal gas, and says that it does not lose its Massachusetts Institute of Technology has been, under the illuminating power when passed through water. Lord Dundonald, of Scotland, took out a patent in 1787 for making coal tar, and erected ovens for this purpose. He obtained, besides the coal tar, a quantity of coal gas, which was burnt in Culcross Abbey and considered a great curiosity.

About the year 1792, William Murdoch, a Scotchman, living in Redruth, Cornwall, began making experiments. that the boys need no coaxing, that it is more popular than and found that when coal was heated in an iron retort an inflammable gas was given off, and with this gas he lighted his residence. Murdoch, possessing the character-There is probably no reader of this paper, certainly no istic slowness of his people, made no further use of the gas inventor, who, if he is not familiar with the use of tools, does than burning it for the amusement of his friends, and it was not feel that a few such lessons as that class get in sharpen- nearly ten years before his invention was published abroad. ing, handling, and taking care of tools would not have been. In the meantime Philippe Lebon, mentioned at the beginof as much use to him as all the Latin he learned in school, ning of this article, who was then engineer of bridges and or that his time would not have been as well employed at roads, began making experiments by heating wood, peat,

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St. Petersburg, on the spot where the Czar fell.—Full page engrav-		

of heat, yielded an inflammable gas, which could be used in Africa. This experiment may not prove a financial success in Boston, but we are satisfied that the idea will yet be not only for illumination, but also for the production of made practical, and become in time a success. heat and power. His apparatus he called a thermolamp.

Grant the desirability of such a modification of the school According to French authors he lighted his residence in system, and practical difficulties will present themselves-Paris in 1796. In 1798 he read a paper before the French have done so already. There is a lack of teachers: normal Academy describing his thermolamp, and this paper was schools do not produce them, nor can they be found in the translated into English and German by Winsor. In 1799 he shops, although the latter can do more than the former. obtained a patent in France for producing gas from peat, The number of good, thorough, enthusiastic teachers is small, etc., and applying it to purposes of illumination and heating. because a good teacher, like a poet, is born, not manufac-Two years later the brother of James Watt, being in Paris, tured in a normal school, and of this little band too few wrote to England, saying "that if anything were to be done with Mr. Murdoch's gas, it must be done at once, as know aught about tools, or could lead and instruct a class in carpentry, while our best carpenters have as little conthere was a Frenchman in Paris who had similar ideas, and ception of how to preserve discipline among school boys. proposed to illuminate that city by these means." Even Another difficulty is the expense; tools cost money, much after receiving this broad hint, Mr. Murdoch took no steps more than books; wood must be used, and a fresh supply toward securing his invention by a patent, little realizing kept up. The pupils must not be asked to bear this expense, that this simple invention, in less than a century, would be and tax payers object. This obstacle is a serious one in the developed into one of the greatest industries in the world. Lebon had received a theoretical education, and although free schools, where it is most needed.

It was not our intention to pass by the girls, but at pres- his theories were good, there were practical difficulties in