

## INSTRUCTING THE PUPIL.

### DIFFERENCE BETWEEN THE OLD AND NEW SCHOOL TEXT-BOOKS.

The Striking Changes Which Have Occurred—Rise of Illustrations—Language Books Popular—Decline of the "Higher Readers"—The Development of Taste.

In the last 20 years, educators note, striking changes have taken place in school text-books, particularly those for elementary schools. One of the most notable of the differences between the text-book of today and that of the earlier period lies in illustration. Publishers, complying with the demands of the "new education," have employed all the wealth of modern processes in making attractively and accurately pictorial almost every subject of study to which the application of illustrations is at all possible—and in some instances pictures are found in books where their occasion distinct surprise. For instance, it would not seem that the subject of English composition cried aloud for illustration, yet in some of the most recent text-books on the subject pictures are a feature.

To the representatives of American public schools at the Paris Exposition, it was made plain that, in illustration and in general effectiveness, the United States led the world in the making of text-books. They themselves saw nothing to equal the production of this country, and their observation was confirmed by the comment of foreign teachers when examining the American exhibit. Frequent exclamations of astonishment have fallen from them, followed by the wish that books of such character were at their disposal. Admiration appeared to proceed especially from the teachers of central and eastern Europe—Russians and Austrians being conspicuous among the lauders.

The books upon which illustration is most lavished are primers and early readers, geographies, national histories, histories, and all works for the teaching of science. No pains have been spared to make the pictures not only beautiful, but correct. For instance, when a place is pictured, it is no longer, as in the older text-books, either from the sketch of some traveler or purely from the imagination, but from photographs taken on the spot. Illustrations in color are becoming more and more in vogue in books intended for the youngest children.

All these results are in striking contrast to the attempts at illustration made in the older books, for, of course, such attempts have been made from the time of Comenius, whose "Orbis Pictus" is one of the curiosities of educational literature. But 20 years ago the idea of the abundant illustration of today had not been conceived, and processes had not been invented, developed, and brought to the point of the present cheapness—for school text-books must not be expensive. Hence, such illustrating as was done was with more or less crude wood-engraving, and the effort made today to secure truth in the representation of objects was not deemed essential.

In no class of text-books has a greater change taken place than in geographies. The old geographies were little more than bald-presentations of political divisions of the world's surface and of lists of names of places. The new geographies show an entirely different conception of the subject. They seek to exhibit man as acting upon his environment and as acted upon by it. Consequently, the new geography is full both of history and of science.

Much of the change in general in text-books is attributed to a widespread adoption of the method of induction in presenting knowledge to the child. This has not only radically affected the treatment of nearly all branches of study, but has created a new class of text-books for the teaching of the vernacular, called "language books." It is adapted to very young children, and is meant to teach them how to think and to form sentences, and serves as an introduction to formal grammar. The popularity of works of this type is very great; they are used universally throughout the country. The idea originated with German educators.

A change in instruction is leading to the decline of the higher readers—the "fifth" and "sixth," since they were called—and the substitution of complete pieces of literature for the fragments which the readers contained. Publishers have responded to the new trend by bringing out small volumes, each containing one or more complete poems or essays, and annotated for the special use to which they are to be put. Dr. William H. Maxwell, the superintendent of schools in New York City, was one of the first to discard the advanced readers, and on this subject he says: "The memoriter method of learning—found its counterpart in the rote method of elocutionary drill on the fragments of the school reader. The method of studying a complete piece of literature, on the other hand, is, or ought to be, something quite different. It does not neglect elocutionary drill, but it relegates it to a subordinate place; it makes it a means to an end, not an end in itself. It secures an understanding of the matter and an appreciation of literary beauty. It shows the child how to read. It aims at producing important effects on the mind and character of the reader. It is content with nothing less than the development of a taste, founded on understanding, for what is good in literature."

Some of the associate superintendents in New York City agree that in mechanical as well as substantial respects the text-books of the present

day are superior to those of two decades ago. Others believe them to be much better in conception, substance, arrangement, and in attractiveness to the eye, but no better in the purely mechanical respects of paper and binding.—New York Post.

### SHEEP FED BY ELECTRICITY.

An Up-to-Date Invention for Farmers Now on Trial in Michigan.

A man named McNair has devised a system of pasturing sheep by electricity and experiments are being made with it at the agricultural experiment station of Michigan at Lansing. In recent years nearly every town of any size has been provided with an electric generating plant and frequently the wires are strung along country roads from town to town. This fact led Mr. McNair to attempt the use of electricity on the farm. For sheep feeding he devised a curious pen some 15 feet square, built of wire and mounted on broad, flat wheels. This pen is designed to run in any pasture, even though it be hilly. Wires connect it with a small motor stationed at one side of the pasture, this, in turn, being connected with the electric wires from which power is derived. A turn of a button and the pen slowly creeps across the field. That is the essence of the invention.

Two lambs and part of the time an old ewe have been pastured in the pen during the summer at the station at Lansing. The field is planted with lucerne, growing thick and heavy. The pen is so arranged that it crawls the full length of the pasture in one month, traveling about two feet an hour; at the end of this time it is switched around and travels back again. As it moves the sheep eat every bit of fodder, eagerly cropping next the forward side of the pen as it runs over new ground. A bit of canvas duck is hung over one corner of the pen so that the sheep may be well sheltered and, curious as it may seem, they have become so accustomed to the moving of the pen that when they lie down to sleep they snuggle up close to the forward end of the pen so that they may lie as long as possible without being disturbed by the rear end of the pen as it creeps toward them.

When the pen has passed, the lucerne that has been cropped by the sheep grows up again, and by the time the pen has made its monthly circuit the pasture is again in good condition. The advantages of this electrical pen are that the sheep are kept from running over, half-eating and trampling down a large amount of pasture, and it keeps the sheep quiet so that they take on flesh rapidly.

But it has its disadvantages—the sheep must have water carried to them daily—and the electricity is somewhat expensive. Still the experiment thus far has shown striking results. One wonders what the inventor will do next. Already he has produced a mechanism by means of which the farmer, on arising in the morning, may push a button at his bedside and feed all his horses, there being an electrical connection with the barn so arranged that when the button is pushed a certain quantity of oats is let down into each feeding box.

### QUAINT AND CURIOUS.

Some statistician looking after queer facts discovers that the average woman carries 40 to 60 miles of hair on her head.

A pretty black cat is the much admired pet of a lady of St. Louis, Mo., Mrs. Anita Comfort. The owner has the cat's ears pierced, and now pusses sports a pair of diamond earrings, which glitter attractively against her dark fur.

At a dinner given by Count Boni de Castellane in Paris recently, dwarf cherry trees loaded with fruit were used for ornament and the cherries for desert. The cherries, it is said, cost \$4 each. The trees had been forced in hot-houses.

In Maryland a man has patented a shirt having a detachable bosom, which can be easily removed and a fresh one put in its place when soiled, the shirt having a series of buttons, to which tongues on the edges of the bosom are attached.

Chopin's study for C. Minor for the piano has a passage, taking two minutes five seconds a day to play that requires a total pressure of the fingers on the keys estimated at three full tons. In other words, it requires about a tenth of a horse-power.

The present possessor of a piece of land in the district of Itzehoe, Denmark, pays what is believed to be the smallest rent paid by anybody in the world—a single penny. The land has been in his family for generations, and escapes a higher rent through the act of one of his ancestors in saving the life of Count Rantzau of Bitingberg castle.

The stoves of the Jollian Indians are curious things. A hole is dug in the ground about 18 inches deep and a foot square, and over this is built a roof of clay, with holes of different sizes to receive the various cooking pots. Roasting is done on pots passed through the hole, so that the meat comes out very much smoked unless great care is taken to have only live coals at the bottom of the oven.

Comes High. "Do you refer to your titled son-in-law as your Highness?" inquired the old friend.

"No," answered Mr. Cumrox. "I refer to him as my High-priced-ness."—Washington Star.

### Suez Canal to be Widened.

The Suez canal is to be deepened and widened, if Mr. Linden W. Bates, the London hydraulic engineer, who is now at Suez, reports that the work can be done within a reasonable figure. The Canal Company hopes that the great waterway can be enlarged by the use of dredges, which are comparatively inexpensive. There is great need of more room in the channel, for ships have been growing even greater, while the canal has remained unchanged.

Mr. Bates, who is now going over the canal en route to Queensland, for whose government he has built three colossal dredges on the Tyne. These are to be used in clearing the harbors of Queensland of mud and detritus. The largest of the trio is the Hercules, a sea-going dredge of 5,000 horse-power, and, by permission of the Queensland government, it will be held in the canal for a time and experiments made under the direction of Mr. Bates. It proves that dredging is a satisfactory method of enlarging the waterway between the Red Sea and the Mediterranean, the Suez Canal Company will proceed forthwith to arrange for improvement on a large scale.

Both the war office and the colonial office are concerned in the enlargement of the canal, and the request made to Mr. Bates to go to Suez was endorsed by the latter department.

### Electricity in the Schools.

In an article in the current number of Success, Thomas A. Edison makes some hopeful predictions for electricity. He says: "Not only as a motive power for massive enterprises will electricity find uses during the coming half century, but it will also be applied to the 'gentler sciences,' if I may use the term. By this I mean surgery, optics and astronomy, but greater minds than mine must dwell on this particular branch of electricity usage. Already we have surgical instruments that are being operated by electricity with gratifying success; indeed, they have gone beyond the experimental stage. It will find a large field in the operation of manufacturing machinery, as the Niagara Falls plant shows, and it may even extend to the airship, but I think it best to confine its uses to the earth, until these uses have been exhausted."

"Electricity as a science should be made one of the several studies in every school in the land. It should rank with spelling and arithmetic; for, the more it is used, the more potent it becomes as an important element in all of the world's general affairs, and its value, in connection with practical business and business affairs, cannot be given too prominent a place in America's future."

### Indigo to be Displaced.

British manufacturers have not thought it worth while to study the progressive chemistry of aniline or naphthol dyes, says a London correspondent to the Paris Messenger. They have been content to leave the field open to Germany, and the result is now obvious. Time was when British aniline dyes commanded the market of the world. It is impossible to understand why that market was ever lost. Nothing but indifference can account for it, and then we have to explain the indifference, which is impossible. At any rate, the market has gone, and there is not an aniline or naphthol dye used in the west day which is not produced in Germany.

The industry of the manufacture of British dyes is dead, and the industry in British India of the growth of indigo will follow it. Behar and other provinces will feel it, and it will mean the ruin of innumerable natives who have lived year after year on the produce of indigo. Dyeing with indigo, however, is at best a clumsy and prolonged process. It means immersions in various compounds according to the material of the fabric to be dyed.

Like indigotine, the new German dye provides for a single bath. So confident are the manufacturers of the success of their product that a considerable sum has been spent on the necessary productive plant, and the new year will witness the advent of the new dye. Save as a specialty indigo will not last beyond a year or two, and then another British industry will have succumbed to German competition.

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